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THE COVER PHOTO

The Birchwood Rifle and Pistol Range, located 20 miles north of Anchorage, Alaska. The nice area is owned by the Izaak Walton League. Range in view is the smallbore rifle, and the pistol range is to the left with a beam separating the two.

Knik Arm of Cook Inlet is in the background, and the very high tide leaves much of it bare at low tide. Mt. McKinley rises in the background but is not visible in the picture because of clouds. It is about 130 miles to the North.

Not shown in the picutre is a big bore range that goes to 300 meters. A bench rest range that goes to 200 yards has an inclosed firing line housing 4 benches over a concrete floor. A wood stove with plenty of wood keeps it warm in the Winter. There are now two benches outside the shanty with room for unlimited expansion.

There is an ideal place for trailers and campers to park, with electricity and water available. Dick Hannon, the caretaker, lives at the range, and being a flower fancier, keeps the place looking nice.

Photo was taken by Dee Donaldson.

GEORGE KIRK IS "FOUND"

(George Kirk learned of mention of himself and his record making home-made rifle in January P. S. through mutual friend Larry Nuesslein. Kirk herewith brings himself and gun up-to-date.)

Gentlemen:

I was pleasantly surprised to see your cover and article about C. F. Backstrand and myself in your Jan. 1963 issue. Betty Duncan's facts are quite accurate and I am wondering where she rounded them up.

I would like to say that Clarence Backstrand is one of the finest team partners that I have ever shot with. His coaching during that 50 yard 2-man team match back in 1950 was largely responsible for my 400 score, as there was plenty of "conditions" at the time. I'm sorry I wasn't able to return the favor by talking him into a 400 also. I am sorry to hear that arthritis is preventing him from enjoying his favorite sport.

As to what happened to George Kirk:—I am living on a farm at R. D. 2, Kempton, Pa. about 5 miles north of U. S. Route 22 from Lenhartsville in Berks Counyt. This area is well blessed with white-tail deer and woodchucks—also ringnecks, rabbits and squirrels. I have a beautiful stream 50 yards from the house wherein may be found trout and smallmouth bass. I have a small shop right at the house where I do a bit of gunsmithing as the spirit moves me. No rush jobs—**but none.** Accuracy—si; hurry up—Yankee, go home. I have 40 acres of grass and alfalfa (keeps the deer and woodchucks nice and fat) from which I make hay. My son and I spend many weekends in our boat on the Chesapeake Bay, Delaware River, St. Lawrence River, etc. fishing and water skiing. As for shooting, aside from hunting in the Fall and groundhogs during the Summer I don't seem to be able to find much time for it. I am at the bench rest quite a bit sighting in and testing, but haven't shot in competition since 1957. There was no particular reason for giving it up and I may try it again one of these days.

Now I'd like to say a few words about my "homespun contraption." The accuracy of this rifle has always been a source of great satisfaction to me. It consistently groups under one inch C/C at 100 yards from bench, even 50 shot groups. I have 10 shot groups of ½" to ⅝" and 20 shot groups of ¾" to 15/16". The bench rest boys may sneer at these figures, but don't forget that this is a .22 rim fire shot off of sandbags from the shoulder with a 3 lb. trigger pull. This brings to mind a Sunday afternoon bench rest match a few years ago attended by some very fine shooters from this area, equipped with some very fine bench rest rifles, at which I won 3 out of 10 matches and had the best group of the day measuring ⅜" C/C for 5 shots at 100 yards. All the other guns at this shoot were "hot-shot" center fire jobs. Loren Samsel finally put away his Wasp and got out his Win. 52 in disgust. Back in 1953 I won the Neubling Match at the Bear Rock Rifle Club with a 1998X2000 and the Singmaster Trophy Match at Hill Crest Rod and Gun Club with a 2000X2000. These were both indoor, 75 feet, iron sight, prone matches. I also had a 500-38x at the Metropolitan Indoor Match held in Brooklyn, N. Y., 50 shots prone at 100 yards, telescope. I don't remember what place I got in that match but I believe it was in the first ten. So you see this "contraption" really shoots if the "old man" does his part. This is, in a way, a bad situation because how the heck can I alibi those nines?

I would like to add a bit to Betty Duncan's description of this rifle. The receiver and the whole action which I designed and built is very heavy, almost massvie, which makes for great rigidity. The barrel, which is a "worn out" Win. 52 heavy barrel, is free floated and with the receiver solidly bedded, vibrates like a tuning fork. The chamber has a throat that is free-bored for about ⅛". The bullet must jump before it touches the lands. This action has readily adjustable headspace which can be set anywhere from 40 to 47 thousandths of an inch. The best accuracy has been achieved with a setting of 43 thousandths with Mark III ammo, which the gun seems to prefer, although other makes of match grade ammo shoot nearly as well. The trigger mechanism, which I desgined and built, is externally adjustable with 3 adjustments; backlash, sear engagement and pull. There is no perceptible movement but I estimate it to be 1 to 2 thousandths, and the pull remains very uniform. On 10 tries with a trigger scale the pull varied less than one ounce from pull to pull—8 pulls being 49 oz., one 48½ oz., and one 48 oz. plus.

By the way, in 1955 I broke down and made a new stock for this piece. The old 2X4 pine job has been carefully preserved as a "sacred relic." It is also available as a spare in the event that it should be needed.

Well that about wraps it up from here. Your story and pictures certainly revived some very fond and pleasant memories of "the good old days" and the great bunch of shooters I had the good fortune to meet and shoot with during the years just after the war out in California and Arizona. And one I remember with real affection is my old teammate C. F. Backstrand. Long may he tool that hot Corvette over the freeways from one small bore tournament to the next.

Yours sincerely,
George Kirk

(Editor's comment: It is apparent that George Kirk is still a rfleman at heart and we'll be watching for him to return to the competitive game "one of these days," and we hope that won't be too far in the future.)

CREDIT WHERE DUE:

Dear Phil:

Just like to say hello and clear a few things up. First, although I'm sure Dieter Anschutz would like to claim R50 ammo, he has nothing to do with it. Mrs. Duncan has been led astray. It is made by RWS, the German ammo people (same ones that advertise SINOXID primers).

Also quite a lot has been written about the dysentery in Cairo and that the Embassy could have helped. This may have been true, but I never heard of the thing before your last article (usually I have big ears and a long nose). Also, it seems strange that they would let Gen. Jones be sick in bed for three days. Capt. McMillen had many Marine friends in the Embassy, yet he still got sick and told us of another Marine (attached to the Embassy) that was so sick from dysentery that he was in the hospital. Leaders and members of the team were in contact with the Embassy every day so there was no lack of communication.

The NRA told us to expect this **before** we even left the States. In fact, one of the reasons we went a week and a half early was in hope that everyone would get sick and then be well by the time they shot. I'm sure that there is no drug available in Cairo that they wouldn't know about here.

Except for a few squabbles during the tryouts, the NRA did a pretty good job on this trip, I feel. You may not realize it but my last statement is quite a reversal from my usual stand, since I can't remember ever complimenting the NRA before, but they are learning and deserve some credit.

While we tried to get around the sickness by arriving early the Russians did just the opposite. Their team members flew in in small groups about a day before their particular match and left about the day after, hoping to be gone before they got sick. Their idea worked and ours didn't.

Rather than make excuses like sickness, etc., we have a much deeper fault or reason for losing. We just don't have any depth on our teams. Granted, some people were sick, but we still wouldn't have won too much more, in my opinion, if they had been in tip-top shape. We would undoubtedly have won the center fire pistol match but I don't know what else.

Sure, we develop excellent individuals like Anderson, McMillen, etc., but you can't pick 5 men out of 25 or 30 free rifle (7 in case of running deer) shooters and hope for them to be able to beat the best 5 out of several thousand, which is what the Russians and other Europeans can chosoe from. Until we change our national form of shooting to something approaching International shooting we just don't stand a chance. The odds are against us.

Compare the scores of the Russian team against our team and for the most part you'll find that all 4 team members on

the Russian team fired about the same score, while our scores are usually very scattered. This comes from having a large field to choose from. We should thank our lucky stars also that the Russians don't have ammo and equipment equal to ours; then you would really see some shooting. In talking with them and observing such things as severe pititng in the bores, I am convinced that they are fantastic shooters, limited by their equipment—maybe not all Andersons, but just one step behind.

Another thing that has escaped print so far, is an instance that caused considerable agitation on the day of the 300 meter free rifle shoot. The team went on the line and most of the ammo wouldn't chamber. Disconcerting to say the least! Just about everyone ended up using Jim Hill's handloads and Verle Wright even had to borrow and shoot Hill's rfile prone. Mistakes happen, but maybe if I live long enough I'll be able to go to an International match where everything goes right for once.

While I am in a talkative mood, I'd like to pose a question. We are sneding a prone team to England and Europe this Spring and it is to represent the U. S. It seems only logical to me that the very best shooters in the country should be on this team. Why, then, was a limit of 3 military men put on the team and then to top it off, the **tryouts are at the same time as the Pan-American Games.** Now I have nothing against sending a civilian team, but I don't feel it should represent the U. S. unless the team is composed of the best prone shooters in the country, be they military, police, civilians, or bums.

I just got the word that the NRA now will **require** the referee to weigh **all** triggers (still 3 lbs.) in registered matches. Although I would rather have had them lower the weight requirement or drop it altogether, I must prefer seeing the rule enforced than the way it was before. **A word of caution to referees:** The Walther rifle has a trigger that can be changed from 3 lbs. to about 3 oz. with a 180° turn of the adjusting screw—on some you can do it with your finger.

Yours for better shooting,

Jack Foster
(John R. Foster)

AN UNUSUAL BALLISTICS PHENOMENON

By Creighton Audette

At first, I was somewhat reluctant to write up this experience for a magazine devoted to the activities of people who shoot all their bullets in one hole from bench rest or who have .22 rim fire target rifles which will consistently shoot ½" groups at 100 yards, since the incident involves shooting in the cellar at 40 odd feet with pipsqueak loads in my .308 match rifle. I gathered courage from Ernest Stuhlschutre's comments in the December issue about .38 revolver shooting in his cellar and his mention of wanting more photographs in P. S.

Vermont winters rather confine my shooting activities and I have been doing a little experimenting to develop a load which I could shoot in the cellar, using my .308 Winchester match rifle, particularly in the offhand position. Dry firing helps to kepe muscles tuned up, but it is nice to do some actual firing now and then.

A little experimenting showed that a good load for offhand practice in the cellar could be made up using a .30 caliber buckshot, 2.5 grains of Bullseye pistol powder, and a large pistol primer. The buckshot are simply seated about half diameter in the case mouths. Lubrication proved troublesome and time consuming, so I tried unlubricated loads. I found little tendency to lead, probably due to the low velocity. followed by one patch wet with Hoppe's, Use of a wire brush about every 40 shots, keeps the bore in good shape and is a lot less bother than lubricating. The muzzle must be raised, to settle the powder in base of case each time before firing. Five shot groups will average in the vicinity of ½° to ¾" at 40 to 50 feet; plenty adequate for practicing offhand for .30 caliber work. Careful let-off and follow-through are required, due to the low velocity and long barrel time. Let one go while the rifle is swinging and it is always further out than you expect. The buckshot are not very round and it is best to cull out the real bad ones or you will sometimes get one that has enough gas blow by so it fails to take the rifling and it will land two or three inches out of the group. To combat this I am going to do the same as I did once with a .38 revolver to shoot buckshot squibb loads. Make a bullet seating die which has a sizing section just in front of the case neck and use .32 caliber buckshot. Push case up from bottom, drop .32 caliber buckshot in from top and size and seat in one operation, using plunger and light mallet.

One night in the course of loading up and shooting some of the buckshot loads, I spied a box of Speer .30 caliber Plinkers, sitting on a shelf, and wondered how these would work out. I figured I would need a bit more powder, but wanted to keep the noise level to a minimum. (The kitchen is right over my shooting range, don't you see?) First load 3 grains and bullet got all of 5" down the barrel. 3.5 grains just about got the bullet out of barrel. 4 grains was a bit better, but three shots showed very poor verticals on the target and the fourth shot went SPTT—Boom. I could hear the bullet rattling around the cellar after that shot and there was no indication of a hit on the target. In going over to the bench to load up some more ammunition, I noticed the lead core of the bullet lying on the floor. The appearance of the core was so interesting that a full scale search for the jacket was instituted with successful results.

I am not sure just how well the photo will reproduce in an illustration, so will give a bit of description. There is no evidence whatever of an impact on the front of the core, which should be apparent in the illustration. Section of core which was originally inside of jacket shows evidence that core tore forward out of jacket. The cut and bent section of core must have been hit by the jacket, since the jacket will fit over it and matches cut and circular indentation left by jacket mouth.

Here is the only possible conclusion I have arrived at. The complete bullet started forward with the burning of the powder. Due to the small charge and the burning characteristics of Bullseye, all the powder burned during the first few inches of bullet travel, resulting in a condition where gas pressure fell off rapidly, while the jacket was subjected to the friction caused by contact with rifling and bore. At some point in its travel down the barrel the bullet came apart, with the core shooting forward out of the frictionally retarded jacket, under the impetus and momentum of the original pressure and velocity rise. Core and jacket proceeded down the barrel, with the core accelerating, relative to the jacket. At the time of exit of jacket from muzzle, the jacket, released from barrel friction, was suddenly accelerated by the powder gases issuing from muzzle and was driven into the base of the core in mid-air! This caused the two to tumble in mid-air and the core impacted on some part of the cellar wall on its base. Jacket and core may have separated in mid-air after contact, or after hitting wall of cellar.

Anybody want to guess what the odds are against this happening?

STOP GUESSING AT HANDLOADS ....

Send your fired cartridge case, bullet with seating depth marked by a file and tell us barrel length, and we will calculate your load, muzzle velocity, pressure and trajectory, using the Powley Computer and Charts. $10.00 pre-paid. Or we have the Powley Computers for $3.50, the Pressure Charts for $10.00 and the Trajectory Chart for $18.00. Ask for booklet.

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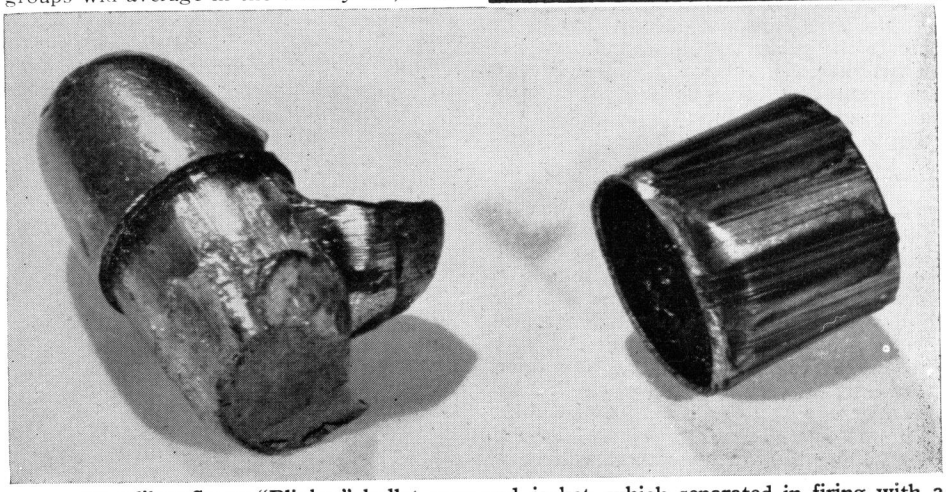


.30 caliber Speer "Plinker" bullet core and jacket, which separated in firing with a very light load. Photo much enlarged to show detail.

SHOOTERS' SHANGRI-LA OPENED AT CLINTON CORNERS, N. Y.

By Edward M. Yard

MASON WILLIAMS, well known to P. S. readers as a shooter and experimenter, as well as bullet maker, has topped himself again. His Shooters Service outfit has just opened an operation unrivaled in eastern shooting for the complete satisfaction it offers the frustrated firearms bug orientale.

In the eastern U. S. ranges are not only scarce, but most often so limited as to offer reasonable service to but a single type of shooting. Indoor smallbore ranges for rimfire pistol or gallery rifle shooting are about all that can be found in many localities. A few 100 yd. outdoor ranges are available to private club members. More often than not, the shooting is limited to one distance or type at a time, even if you can gain admittance.

No comprehensive facility has been open to the public until now, and none has offered the other services Shooters Service new layout at Clinton Corners, N. Y. now has for any responsible shooter east of the Alleghenies. You'll have to see it for yourself.

The average reloader has not before been able to find a chronograph service to help further his own load developments. H. P. White Laboratories, to be sure, have been available, but so remote in a fancied ivory tower that the small time dreamer shied away. Not White's fault, but something down to earth was needed. At Shooters Service, Hi-Vel Harry can drive in and see his latest loading clocked by electronic timing equipment designed at IBM and accurate to one hundredth of a millisecond. They tell me there will be a coin operated service soon.

Bench rest facilities are provided for the target shooter, and for arms testing, on BRSA approved benches. Target ranges up to 400 yards are available for every kind of rifle shooting, testing and sighting, for any caliber.

Separate pistol ranges allow simultaneous handgun shooting, with 25 and 50 yard positions. 50 Meter and International Rapid Fire (25 meter) targets will be added. No need to wait for riflemen to leave. The same chronograph services are available to handgunners, plus a machine rest testing set-up. Accuracy of guns, reloads or components may be checked. The pistol shooter may not yet be as aware, as the rifleman is, of the factors beyond his control which paly havoc with his scores. As time passes Mason may find that he has more pistoleers clamoring for these test services than any other group.

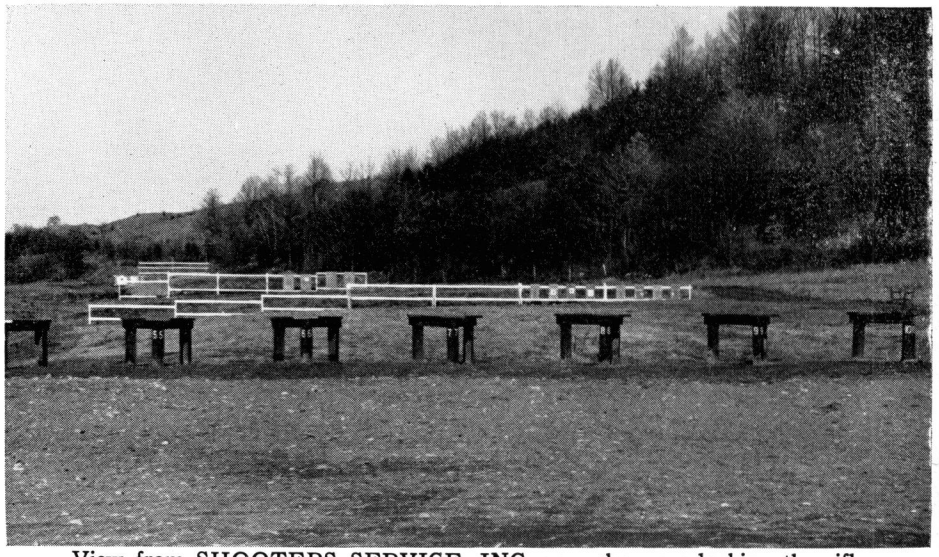
My own experience tells me that if these fellows ever find out what they can learn from accurate chronograph and machine rest tests about their guns, ammo, and components, there will be a traffic problem at Clinton Corners,—a standing room only condition in what Mason thinks will be his private lab. (If you re-read this in 1969, M. W.,—drop me line and let me know!)

With parking facilities for 100's of cars, a picnic and recreation area for families, refreshment and comfort facilities, there is little left to be done to make any shooter or experimenter completely at home. Easily reached by the Taconic Parkway and other major roads, this should become the haven, the focus, and MECCA of every shooter for tens of thousands of square miles of the east. Nothing like it has been seen before. Let's hope, though, that it will be copied over and over again!

If you gun enthusiasts demand it, and will pay for its use, you too can have this in your own back yard, anywhere! It costs real money to put up and to maintain a good range, and to provide and run accurate test equipment. It is naturally very much cheaper to pay your share of what a large range costs, and to share it with others, than to try to do it yourself.

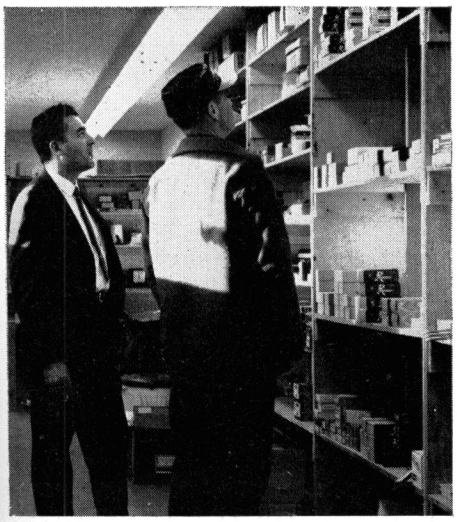
Why not look over Shooters Service layout and take advantage of their unique test services? You'll find it more than worth your while. In fact you'll wonder how you ever got along without something like this. And now, of course, you won't have to. It has been open to the shooter since late 1962.

SHOOTERS SERVICE, INC. new shop and range house at Clinton Corners, N. Y., just off the Taconic Parkway. Part of the twenty bench rest firing line shown.



View from SHOOTERS SERVICE, INC. new shop overlooking the rifle range, with butts to 400 yards.

Custom loading and bullet swaging facilities at SHOOTERS SERVICE, INC. new shop. Complete gunsmithing services are also provided on the site.



Mason Williams looks over stock and discusses reloading with a customer in his unique SHOOTERS SERVICE, INC. establishment. Besides shooting and testing facilities, advice and counsel on most shooter problems may be found here.

THE PROBLEM OF TOURNAMENT NERVOUSNESS

By Presley W. Kendall

A tournament is the best place for an aspiring novice shooter to learn valuable technique, skill, and knowledge gained from conversation with fellow shooters. Likewise, tournaments are the best basis for a shooter to learn and demonstrate his true skill level.

However, it is not easy for a shooter to show his true shooting ability in a match. Because of the anticipated competition, the nervous system will be strongly affected. This condition, itself, is an obstacle to skillful shooting. Practice, under relaxed conditions of no competition, does very little to overcome this nervous condition.

People engaging in any sort of competition experience this condition. Whereas athletes in physically active sports can work off the excitement, the shooter can not. He must keep as still as possible, suppressing his nervousness by sheer will power. The shooter who does this, and has the necessary skill for accurate shooting, will do well. He will be the one who has the "guts" to win. By overcoming these match jitters, or "buck fever," the skillful shooter will do as well as his level, and sometimes better.

The rifelmans' sensory feelings and emotions undergo a physiological nervous process stemming from the cortex and subcortex, the outer layer of gray matter of the cerebrum and cerebellum of the brain.

When a rifleman is experiencing this nervous pre-match jitters, body changes take place due to the disruption of the interaction of the exciting and depressing processes in the cortex, plus the fact that one of these processes becomes dominant in various parts of the brain.

If the exciting process is dominant, a tense, agitating, loud, excited state or condition is experienced. In the other state, depression, the result is low spirits. The individual appears in an indifferent, sulgish, almost drowsy condition. Both of these conditions are the result of disruption of the normal balance of the exciting and depressing process.

With the disruption of the nervous system activities in the subcortex region of the brain, causing excitement, bodily changes take place in the physiological senses. The vascular system and heart function differently than the norm. The pulse beat increases, sometimes reaching possibly 120 beats per minute. Due to higher blood pressure, the pulse beat rate is up. While aiming, the rifle movement takes on a rhythmical, vibrating oscillation. Breathing becomes faster and more shallow. The body becomes hot and perspires. The body muscles reflect this nervousness by causing the rifle to oscillate violently which aggravates the situation still further because the shooter realizes he is losing his steadiness in position. Coordination is seriously upset. The shooter becomes indecisive. He experiences fear and anxiety for his score. He squeezes th trigger without confidence, usually during the worst part of the aim after relatively steady period has passed. The trigger can not be squeezed evenly. The trigger finger movements become jerky and convulsive. Sometimes the feeling arises that the trigger has increased tremendously in pull required to fire the rifle. Timing is lost. The shooter fears that he doesn't have enough remaining time to fire all his record shots. He must therefore, go ahead and shoot one or two bad shots in order to make up for lost time.

These psychological and physiological reactions are experienced by all tournament shooters, but to varying degrees. The better trained the shooter, the more confidnce he has in himself, leading to a lessening of match jitters. At the opening of a shooting season, or after an extended lay-off, even the most experienced tournament shooter has these nervous feelings, due to a not too complete feeling of self confidence. However, the experienced shooter will force himself to overcome these reactions, as much as he has in the past, forcing himself to shoot well.

How to overcome nervousness? Certainly not by "liquid guts"—alcohol. Fortunately there are very few competitive shooters who drink before a match. Those that do never do well, even for short periods of time. As the matches progress, and a reserve of physical, emotional and mental endurance is called for, the drinking shooter must fall by the wayside, as he has none of the reserves. Failing to even attain limited success, the drinking shooter must fall by the wayside, as he has none of the reserves. Failing to even attain limited success, the drinking shooter fades from the tournament circuit, never to be remembered.

Violent physical exercise must be likewise avoided. Physical endurance is expended, leaving the muscle tone in a weakened condition, just before it will be called on to perform at a maximum.

Some shooters claim they can shoot better if they do not get a complete night's rest before an impending match. This technique, also, is doomed to failure. While very limited in success, this, again, leaves the body processes, muscular, emotional and mental, in less than peak condition to win in today's highly competitive events.

No one is **born** with a superior iron will and coolness under match pressure. This coolness comes only from long extended periods of learning self-discipline and control. Match jitters are caused by thinking about the impending match. Nervousness is a psychological condition, bringing about physiological changes in the body; a faster pulse, disruption of coordination, etc. In order to overcome nervousness, a shooter must force himself, by will power, to change his thoughts from the match and his score. He must concentrate on producing each shot in an as exacting a manner as possible. Each shot must be the very best the shooter can shoot, never digressing from this course, even for an instant.

How do some of the more successful shooters react at the beginning of a match? Gary Anderson, Itkis of the U. S. S. R., Tom Pool, myself and others, move about in slow motion, dragging out each step of preparation, from loading the cartridge block to adjusting the shooting coat. These shooters lay about as if they were disinterested observers. Gary Anderson, the World's present day best free rifle shooter, will fire a shot, slowy extract the spent round, casually inspect it, calmly lay it down and start the loading process, slowly again. He is careful not to waste physical energy or become excited.

These shooters present a calmness that belies their actual condition.They are nervous, yet, knowing wild thrashing about to be futile, instead, move about slowly.

The shooter should not keep a tally of his individual score as he progresses in a particular match. If shooting above his average, he may unconsciously slack off, settling for less than his best, or, he may experience greater nervousness at the anticipated good score he is about to produce.

If he finds he is shooting below his average, he may become disgusted with himself, and his equipment, surrender to a bad score, and throw his equipment about, causing extensive damage.

Time is helpful in combatting nervousness. Because most match time limits are long enough for a short pause, it is not wise to rush the shooting exercise when one feels his nervousness is not subsiding.

It is important for a rifleman to occasionally check his remaining time in long matches, when fatigue and nervousness have exhausted the nervous system, and the shooter's will is weakened. A. Bodanov of the U. S. S. R., who won several Olympic European and World Championships in the '50's, recalling one international match said: "As a rule, riflemen who do not have self-control, will, in such cases, shoot in a somewhat haphazard fashion. This once happened to me. All I had to do was think that soon the end would come, and, with it, the longed for rest, when I got a 'six.' I made the next shot. It was a 'seven,' and on the other side of the bull at that. It took me much effort to get ready again. After waiting a few minutes, I continued shooting and did well."

One can not, however, waste time. Another difficulty may arise; that of not having enough time for shooting. It often happens that a rifleman does not have time for reasons other than his waiting to take plenty of time to quiet his nerves.

Sometimes a rifleman simply can not force himself to shoot because of the disruption of the normal exciting and depressing processes and because of the disruption in his muscular coordination with the result that he manifests indecisiveness and fear lest the shot be poor.

At the first sign of indecisiveness, which shows up first in the form of fear of pulling the trigger, a rifleman ought to unload his rifle and dry fire for a while. This form of limbering up will return equilibrium to the nervous system and reestablish muscular coordination to a significant extent. Then the rifleman can continue to shoot with regained confidence.

Everyone suffers from nervousness in a match. Determinedly used, it can result in remarkedly high scores, even in the face of seemingly adverse conditions.

(Continued on Page Six)

Problem Of Tournament Nervousness

(Continued from Page Five)

The less experienced the shooter, the more of a battle he has with jitters. Proper nervous control can only be learned in match shooting. The shooter, by shooting in as many tournaments as possible will usually gain a high degree of control.

I look at it, perhaps, in a good way. I've shot so badly in some matches, and well in others, that one more either way won't make much difference. Therefore, not having much to fear of bad results, I usually do fairly well.

It's all part of the game!

THE MIDNITE SUN INTERNATIONAL RIFLE LEAGUE

By Scott Donatdson

For the past 7 years we have been holding a three stage postal match that includes 20 shots prone, 20 shots kneeling and 20 shots standing for each stage. The macthes are fired on the 200 yard, reduced 300 meter target. We allow any rifle that a shooter wants to use, as long as it is safe, any sights, any trigger; in fact the only thing restricted is the positions, which must conform to the NRA provisions. The three matches are generally fired in May, June and July. All entry fees after expenses are returned to the shooters. This past year, after the first three places in each division of scope sights and iron sights, the money left was returned equally to every fifth place in the entry.

The picture shows the shooters that competed in one of the Anchorage Rifle and Pistol Club matches. The past several years we have not been able to obtain permission from the Army to use their range so we have used the Birchwood Rifle Range belonging to the Izaak Walton League. This range does not have carriers so we sight-in, then start official firing. Sometimes conditions are such that shots can be spotted at 200 yards. The fellows that use various .22 calibers have a hard time spotting shots, but it is a fine shoot and every one seems to enjoy it, because any rifle can be used that a person has and feels he can win with.

The past few years the Army Biathalon Team has shot with us to sharpen their shooting for the Winter matches. They used .243 Winchester Mod. 70 rifles with iron sights.

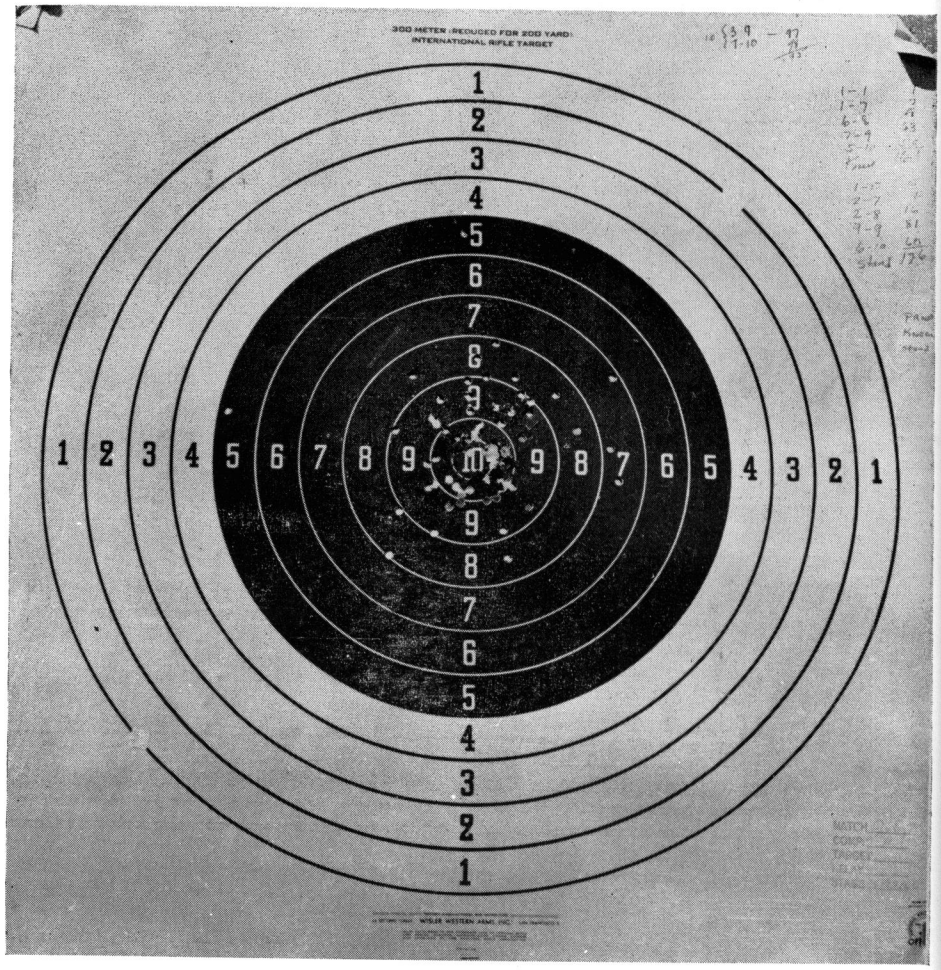
This posatl league is known as The Midnite Sun Internatioal Rifle League and to get further details write to Mr. Dave Drew, c/o U. S. Marshal's Office, Anchorage, Alaska. Last year's three match aggregate was won by Scott Donaldson, Anchorage, Alaska, in the scope division, and by Dean Alley (ALLEY SUPPLY CO.), Sonora, California, in the iron sight division. We will take any one willing to shoot any rifle, from any part of the country or World.

We shoot our own matches by a schedule that is set up before the season starts and we shoot on those dates regardless of the weather. So far we have not had to shoot in anything worse than a day with occasional showers. Most of our Alaska weather at the Birchwood range has been ideal. Last Summer, mirage was troublesome when trying to spot shots, but most of the shooters know their guns and can depend on the grouping.

The target illustrated is a composite group of 60 shots (20 prone, 20 kneeling and 20 standing) that was made by placing the record targets over the top of this one. This is shown not because it is good, but for you all to see what you will be competing with. Some of our shooters in the Midnite Sun International League are better at distributing the shots more evenly over the target, and some do a little better than the target shown. But with the prize money being distributed as it is, the poorer shooter may get his entry fee back.

Write to Dave Drew in April or before and arrange to shoot this match in 1963. You fellows that went to Cairo are welcome, too, and while yuor entry may overcome us, we will be in there shooting just the same.

Alaska Free Rifle shooters. Back row, left to right; Dick Taylor, Army Biathalon Team, Lt. Joe Wilson ABT, Dick Drew, Arden Benthien, Sgt. Stan Zalewski ABT, Army shooter unknown, Lt. Pete Lahdenpera ABT. Front row; Dave Drew, Casey Holm, Scott Donaldson, Bud Ertwine, Harold Curtis.



Sixty shot composite target for 20 shots prone, 20 shots kneeling and 20 shots standing, fired at 200 yards range with Free rifle.

HOW STRAIGHT SHOULD A BARREL BE?

By Fred W. Hallberg

While an employee of Army Ordnance some years ago, I witnessed a firing test of a .30 caliber Springfield rifle, the barrel of which had been deliberately bent almost one eighth inch from true. That is, the muzzle was nearly one eighth inch to the left of the original centerline of the barrel. A comparison of groups fired at 600 yards from the straight barrel and those fired from the bent barrel showed little visual difference. As the bent barrel heated, the shots would string a bit but, once heated and equilibri-

um reached, the bent barrel seemed to group just about as well as the straight barrel. The bent barrel simply threw its groups farther to the left. The rifle fired was not of target quality and, while 36 inch groups were the best fired, the fact remains that the bent barrel seemed to make no change in group size. It would be interesting to duplicate that test with a target rifle of known quality and with target grade ammunition.

Memory of that experience has always made me feel that if an otherwise good rifle does not group, one should first look to the bedding rather than to the barrel. If the barrel is of proper bore size and not worn or physically damaged, other factors will most often be found to be at fault. But does anyone want to shoot a bent barrel? I certainly do not. Yet, I have just now run into something that makes me wonder how many of us are shooting barrels that are not straight. And what can be done about it?

A few days ago, I happened to drop into Leo Peterson's gunsmith shop at Judson, Minnesota. Mr. Peterson had received a dozen or so rifled barrel blanks in various calibers from one of our larger barrel makers. One of these barrels was intended for his son, a well known big-bore competitive shooter. While trying to figure out a way to properly select that barrel, he hit upon the device of turning each barrel about one and one-half inches at the ends so that the outside turned surface was concentric with the bore. He then placed the barrel in a cradle consisting of two "V" blocks. Two rollers made from freely revolving ball bearings were mounted at the top of each "V." The barrel was placed in this cradle, pointed at a diffused light, and revolved. As I looked through the bore it was apparent that nearly all these barrels were bent to a greater or lesser degree. I want to emphasize that these barrels were all blanks—that is, the outside surface had not been turned to finished dimensions.

Now this raises some questions that I hope will be answered by those who know something about this problem. Are all blanks supposed to be straightened by the receiving gunsmith? Few gunsmiths have facilities or know-how for such work. Are barrels that are finish-turned by the manufacturers also straightened by him? Are such barrels the only barrels that he does straighten? If barrels are straightened after turning, is the outside surface turned again to make it concentric with the bore? If barrel blanks are not straightened when they are sent out, should they be sold without a statement to that effect?

A friend jokingly suggested that nothing be said about this question because bent barrels are a desirable conservation measure for our dwindling supply of game. But as one who does most of his shooting at innocent paper targets, a bent barrel could irritate me considerably and even, perhaps, give rise to a few uncouth but descriptive remarks. If ever again I hear someone lambasting his equipment, I'll instinctively assume he has been shooting such a barrel.

(Editor's comment: Fred's paper seems a bit contradictory. It would seem that after looking through a few barrel blanks and seeing bores that were not absolutely straight, he now distrusts his own earlier observations and sound opinions. However, answers to Fred's questions should be information that we would all like to see on record. I can't think of better qualified people to provide the answers than custom barrel makers and riflesmiths who assemble the barrels into finished rifles. So, I requested representative barrel makers and riflesmiths with national reputations for supplying quality products to critical riflemen to supply some answers and make such pertinent comment as they might wish to. These people are responding 100 percent. Following is what they have to say.)

FROM ROY F. DUNLAP, Tucson, Arizona. Gunmaker specializing in target rifles for civilian shooters and the military services. Author of gunsmithing books.

Regarding Mr. Hallberg's article, my comments would be as follows:

Every barrelmaker and most gunmakers know that few barrels are perfectly straight, and further, that it isn't too important. What is important is that a barrel which warps when turned down from blank to light or medium finished dimensions, if straightened, usually will not hold point of impact for more than a few shots, the heat of firing tending to return it to its normal pre-straightened state. If not straightened, the same barrel would probably shoot very well and hold a round group at point of impact, without "walking." Most barrelmakers do not straighten barrels which have slight curves for this reason. It is understood that I am speaking of very slight variations, which few people could even see with a shadow-line.

In heavy barrels, even a considerable curve will have little effect as a rule. The worst I can remember using was a very heavy hammered barrel, an experimental made for me by Ingersoll-Rand in Canada by Appel process several years ago which after turning developed something around a .005" curve toward breech end. In fitting I placed curve in vertical plane—forget whether it was up or down. It was on a .30-06 Free rifle, on M70 action, and tested. Sighted in, fired five shots with match ammo, swung off target and ran twenty rounds of issue through it as fast as I could load, went back to the target, fired five more match. First five shots were about 1¼", second five about 1", groups did move apart, second toward 1 o'clock, but the entire ten shots were inside 2". This was at 300 yards, bench rest, 12X scope, and the ammunition I didn't consider better than 2½" anyway. The group shift could have been barrel walking, or simply change of position for the two strings. I use simple rather hard sandbags under forend and butt, finding this gives me a vrey practical test of performance.

The principal area of stress in a barrel is on the surface. If the blank is turned down close to finished dimensions before drilling, reaming and rifling, very little distortion appears in the finished barrel. This is the "pre-turned" system. Years ago barrelmakers went to great pains sometimes. Barrels then were of steels and heat treatments harder to handle than present-day types. Barrels were turned, and often straightened, between each process, several times.

What Fred ran into in Mr. Peterson's shop leads to trouble. If the blanks are not straightened before turning down, but are turned as is, with ends concentric, he ends up with a barrel straight on the outside, with a curved hole through it, meaning that barrel, if cut in two, will show uneven distribution of metal around the bore—the off-center meaning that heat will be dissipated unevenly and barrel will warp with heat of firing, and walk. Straightening the barrel after turning will not affect this condition at all. The "skin" or hard surface of the blank should be turned off, then blank straightened, and turned down, with frequent checks during turning to see if it changes any. It very probably will remain straight and can be trusted to perform as it should, when installed in rifle.

Bending an existing finished straight barrel would not give any indication of what might be expected from a barrel made from a bent, warped, or straightened barrel made from a blank which changed stresses during manufacture, nor would tests involving military or "shaped" factory sporter barrels which are drop-forged to rough shape and dimensions as blanks, and pick up all sorts of srtains, etc., as opposed to civilian custom barrels which are turned from blanks.

Barrelmakers are constantly after inert steels which are little affected by heat, removal of metal in turning, boring, etc. and great progress has been made in the past ten years by trying various alloys and normalizing heat treatments. The softer, inert steels used in the past by the old Pfeifer rifle company, and Eric Johnson in his .22 rimfire match barrels, were easy to machine, rifled beautifully, and stayed pretty straight, giving fine accuracy—but they have short life with hot centerfires, which includes the .22's of course. The stainless steels are mostly quite inert, but stainless alloys are difficult to machine cleanly even though comparatively soft, and do not have very good life in .30 calibers. Winchester made a few stainless .30-06 target jobs around 1949 which were good, but evidently too expensive to stay with. These have been claimed by owners to hold up for 6,000 rounds.

The premium-grade hard and tough barrel steels such as Hy-Ten and Mex-El used by Bliss Titus are difficult to work with—he sometimes spent ten hours on a barrel, and they didn't always look slick inside, but they shot straight for a long, long time. For my standard match rfiles I use Douglas' pre-turned jobs, don't even bother to check straightness, test from bench at 300 yards, with arsenal match ammo, haven't had one in three years that wouldn't stay in 2". Use handloads in bullguns of course, and test at 600 yards. Nobody has sent one back—and the characters I make rifles for aren't collectors or experimenters—they're interested only in performance and aren't bashful if they don't get it. If a barrel starts walking in the last five shots at 600 and they only get a 14X possible, they'll howl like a wounded wolf. They know. I've had a man call up long distance, complain that he's cleaned the Nat'l Match Course last two matches, but isn't getting enough V's at 300 and 600, barrel must be shot out (it was) could I get a new one on fast? (I did and he was happy.) If the barrelmakre can keep my clientele from fighting back, I'm well satisfied.

Fred's article is going to ruin the morale of a lot of shooters in the worry-wart category, and make neurotics out of the mine-run benchresters, but I'm afraid nothing constructive in barrel manufacture will result. The steel men are always working, but progress is slow. Actually, only test proves a barrel. I have, and most of you, seen and had barrels mathematically perfect in every respect which gave only so-so performance, and technically-defectives which proved superb. And, don't make the mental or physical mistake of crossing your objectives—trying to shoot ten-shot bench groups with a lightweight sporter—"working up" accurate hunting loads from a 100 yard bench in long-range calibers, and the usual stupidities. Consider each rifle, calbier, and bullet only for its designed purpose. My foreign-made 6.5X55 mm featherweight must have had the barrel made in the dark, and straightened by a part-time pretzel-bender; it walks all over

(Continued on Page Seventeen)

Random Shots

RANDOM SHOTS
By Betty Summerall Duncan

A prelude to the Pan-American team tryouts at Lackland AFB, Texas, was the incident which involved a young friend of ours during a practice match on January 21st. The episode has evoked much laughter, but, in a serious vein, might offer some worthwhile advice.

The temperature was below 28 degrees when he was firing the kneeling position (smallbore free rifle) with a hand warmer in his pocket, which he was using frequently to thaw out his trigger finger. Carbon monoxide fumes from the hand warmer began wafting their way up the side of his shooting coat and into his face. After about ten minutes of inhaling the fumes, he was in such a daze that he didn't know what he was doing. He fired, waited for the target to come up and fired again. He couldn't even see the disc which was used to mark the shots, but the butt personnel said that he hit it straight on four times out of five. That caused some concern among the recruits in the butts, so they called the NRA representative.

The official ordered our 19-year-old friend off the line and informed him that he was disqualified. Always rsepectful of authority when in control of his faculties, we understand that the stupefied fellow replied, "Go away and leave me alone. I'm having fun." According to witnesses, the official then grabbed hmi and pulled him to his feet. As soon as he was standing up, he passed out. It was then apparent that something was wrong. When his coat, containing the hand warmer, was removed, he quickly revived but with a splitting headache. He didn't remember any of his actions. He had given every indication of being intoxicated, but his friends all know that he does not drink.

In writing from Lackland about his day, he described it as "a gasser—literally." He continues, "They have had the same problem before with hand warmers around here. The fumes from them are able to make a person forget where he is and what is going on, and do crazy things—things a person would never do if he were awake."

The story has a happy ending. Fortunately, it was only a practice match, and, with the disqualification rescinded, he was reinstated and continued in the tryouts.

We wonder how many "stories" involving hand warmers do not have a happy ending and how many hunting accidents are caused as a result of their use. If more hunters were aware of the possible hazards, it is feasible that the number of accidents would be diminished.

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Many of you will be interested in knowing something about the ranges at Lackland AFB, the scene of the Pan-American Team tryouts and the U. S. International Championships held in Sept., which constituted the (male) tryouts for the Cairo team. The Air Force is to be commended for the great effort which has gone into the construction of smallbore rifle, high power rifle, and pistol safety ranges of all types. The Commanding General and all of the senior staff officers have their (living) quarters on top of one of the back stops, about 250 yds. from the firing points! There are at least eight ranges which have their impact zones falling in the housing section of the base. This was done purposely to prove that ranges can be constructed in populated areas. As the ranges are used by all basic trainees at Lackland, they must be SAFE!!!

The Air Force has very graciously made its testing facilities, including ranges and testing tunnel, available for "public" use—with certain stipulations. It must be understood that the need of the USAF takes precedence over use by others, which is as it should be. The invitation is extended only to NRA members who are known shooters. Jurgens Anschutz, Raymond Sargent, Ed Summers, and many others, including representatives from the various ammo companies, have already taken advantage of the offer.

* * * * *

Winds blew through south Texas with such force on January 24th that we understand the scheduled tryout matches had to be postponed. Returning from the range that a. m., some of the competitors saw a small sports car whipped off the ground by the wind nad turned over. I'm sure that they were happy not to be shooting.

* * * * *

A report just in from Lackland lists the Smallbore Free Rifle Pan-American Team members, headed by World Champion Sgt. Gary Anderson, U. S. Army Reserve, who was high man in the team tryouts. Second was M/Sgt. William E. Krilling, USA, who won the smallbore Grand Agg. at the Int'l Matches held at Lackland Dec. 8-9. Capt. Verle F. Wright, Jr., USA, Int'l team and Olympic veteran, placed third. Rounding out the fourth team spot is Sgt. David Boyd, USMC. Boyd placed third in the Fall Int'l Matches.

* * * * *

Speaking of Texas weather, the Bayou Rifles Smallbore Division surely seems to be in disfavor with the Houston weather man. We've told you about their "Floating" Wildcat tournament in Sept. when the rains came in torrents. On January 12-13 they attempted the first of a series of approved Int'l-type tournaments. This could appropriately be called the "Polar Tournament." Weather promised to be ideal, with automobile air-conditioners in use two days previous in 85-degree temperature. On Jan. 12, there was entirely too much air-conditioning in evidence. The high was 25 degrees with winds approaching 50 m.p.h. Competitors were there from Lackland AFB and English AFB, Alexandria, La. The colonel from Lackland left it to the discretion of the individuals (under his command) to decide whether or not they wanted to shoot, and they voted against competnig. After a hot bowl of chile, most of them returned to San Antonio.

Nine hardy souls completed half of the scheduled 120 shot 3-position Int'l course—20 shots each position, prone, kneeling, and standing. Bob DeWitt of Houston was high overall and high civilian with 472. Jerry Barak, also a local shooter, was second with 414. The high Military award went to Thomas O. Roan, English AFB, scoring 380.

Following the match, T/Sgt. Edward E. Caygle, Jr. gave an interesting and informative talk on various phases of position shooting.

The English Match and Double Dewar on the agenda for Jan. 13th were canceled due to continued "polarci" conditions, piled higher and deeper. Approved day and a half tournaments are set for the second week-end in Feb. and March. We expect to have a report for you on the Feb. shoot, and it is my hope that it will be dull and uninteresting weatherwise. The law of averages is due to change that club's luck.

My apologies to R. W. S. for crediting Anschutz with the manufacture of your R50 ammo. I was misinformed. To make amends, we'll give your Sinoxid primers a plug . . . Phil let my error go through deliberately; he thought it would be fun to test our readers' attention. The experiment worked, and I was called on it, for which I am grateful . . . Incidentally, can anyone confirm this ammo company's connection with the old R. W. S. Int'l Team? For the information of newcomers, it was a 10-man, 2-alternate, metallic sight postal team. My recollection of it is hazy and I only clearly remember the brassards, but I do know that the U. S. team fired at Perry in 1934 and, I believe, in other years around that time.

* * * * *

While on the subject of brassards, an excellent suggestion has been made to the NRA via the following letter, which I hope will receive thoughtful attention. (Note: although the L. A. Rifle & Revolver Club is mentioned, the letter was not written by a Californian.)

"There was a time when to shoot a 400 was quite an accomplishment. The NRA had the '400' Club with its brassard which many wore for years with a certain pride. Then NRA followed the lead of the Los Angeles Rifle and Revolver Club and organized the '1600' Club and presented the members with a very nice desk set.

"I always felt that NRA should have also given the shooters qualifying a brassard. The pen set is beautiful, but most people who come to my home and see it are not shooters; I imagine they feel it is a local socially elite organization. Shooters who have shot a 1600 on the L. A. range have their 1600 brassard from that Club. I would think that many others who have shot a 1600 elsewhere would like such a brassard of which there would not be too many around.

'Therefore, several years ago I made the suggestion at the Smallbore Meeting at Perry that such a brassard be issued. I was told it would 'certainly be seriously considered.' However, by now I fear it has fallen into the limbo into which so many other Smallbore Meeting suggestions fall. I would certainly like to see it resurrected.

"I also feel that there are several 'degrees' of 1600 shooters and that any brassard issued should take recognition of this fact. Some of us have one or several 1600's to our credit, while others like Bob Boydston have 10. (I think Grater and Hollister have somewhere between 7 and 9, and Hank Benson has quite a collection). Some of us have shot one only with scope while others have done it the hard way, with iron. I think that the brassards should be designed to have a sort of 'hash-mark' addition for additional 1600's fired after the first one; also, that the color of the hash-mark should indicate the type of sight used, i. e. red for scope sight, gold for iron sights, or some such arrangement."

The fad of plastering one's shooting coat with flashy brassards has gone out of style among most of the top shooters. Instead, they only wear brassards which mean a great deal to them—i. e. the string of Int'l Dewar Team brassards which covers the back of Ollie Lauderman's coat. Or, there might be a single Int'l team shield. But, a 1600 brassard would be one which all of them would be proud to wear!

To continue with "what the shooters want" in the way of brassards, there is some feeling to the effect that the Randle Trophy Team should have a distinctive brassard and not be issued the same brassard worn by Int'l Dewar Team members

and other Int'l team members who earned their spots in open competition. Passing on this suggsetion is not to be construed as a betrayal to my sex—women have been firing members of a number of Dewar teams.

* * * * *

Here's a bit of information on precautions taken by the English team in Cairo, and which proved highly effective. Quoting from the English RIFLEMAN (which I do frequently because it is such an excellent publication, brimming over with shootnig news)—:"The team had cause to thank Messrs. May and Baker Ltd., the manufacturing chemists, who donated **streptotriad** tablets on the recommendation of British Olympic Association Secretary Sandy Duncan. Most teams had 'Gyppo tummy' or 'Pharoah's revenge,' and some people were very ill for several days, but, thanks to the streptotriad tablets taken daily by our team we had no casualties. Thanks also to Nigel Oakley, the World Record Champion of 1958, who had then just qualified as a doctor, for the prescription."

* * * * *

As two-hundred yard matches have become practically extinct, the annual Jackman Trophy Match sponsored by the San Gabriel Valley (Calif.) Club is interesting. Fired on Dec. 16th with 20 competitors, the prone course of fire was 40-shots iron and 40-shots any. Aggregate winner Dave Ridenour, with a 771-18X score, was also hgih in the metallic-sight match—387-10X. Harry Jackman's 385-12X was 1st in the scope match. Otto Marckmann was runner-up in the Agg. with 769-20X, followed by Jackman's 768-21-X Junior shooters Mike Walker and Gary Olson scored 767-25X and 766-16X, respectively, for 5th and 6th places in the Agg.

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Traditionally, Americans have shot for pleasure. Shooters may deprive themselves of necessities in order to save enough out of the budget to travel a thousand or several thousand miles to compete—because it affords them immeasurable enjoyment. The relaxing atmosphere of a tournament is a refreshing respite from business tensions. The easy camaraderie with those who speak the same language is worth whatever sacrifices a competitor may have made to attend a tournament.

This is a pleasant picture,—**but,** can it last? The prospect which now confronts us is an abrupt change of pace. The pleasurable atmosphere is in danger of being replaced by an austere air of regimentation.

When the subject of the enforcement of a 3-lb. trigger was first re-opened (it has posed a problem for many years), I felt that it was the position shooters' fight. Like those of you who haven't given it serious thought, I considered that it did not greatly concern the prone shooter. But, I find that there are hidden facets connected with rule 9.14 which do concern the prone shooter very much. The more I explore the issue, the more convinced I am that I can no longer remain on the sidelines.

To set the record straight and to emphasize my comments in the January issue—: I believe in the **enforcement of rules** and I do not object to shooting a 3-lb. pull! These convictions, I feel certain after extensive investigation, are shared by the majority of the smallbore prone shooters.

George Stidworthy's opinion is: "If the rule is going to be on the books, then it should be enforced. I'm still not sure that it belongs on the books."

If the purpose of the **mandatory** trigger-weighing provision of rule 9.14 in the Smallbore Rifle Rule Book is to assure enforcement of the previously optional weighing of triggers, what is the explanation for the absence of the mandatory requirement from the 1963 High Power Rifle and Pistol Rule Books? Is it unreasonable to inquire the reason why smallbore was singled out for this experiment in rule enforcement?

Bob Boydston emphatically states: "The rule is outmoded, obsolete, and a handicap to the American shooter It was passed by non-shooters to punish the shooters. A shooter would know better!"

Ed Caygle, speaking as an individual and in no way reflecting the views of the USAF—: "I feel that the trigger rule should read 'a **safe** trigger, defined as a trigger which, when the weapon is cocked, pressure must be applied to cause the weapon to fire and the weapon will not fire unless a definite pressure is applied to the trigger.' The matter of weight should not even be mentioned and anyone who has an accidental discharge should be disqualified at once. However, as long as the 3-lb. rule is on the books, then I feel that it should be enforced. I personally shoot the 3-lb. trigger in all prone matches including Int'l. I feel that a light trigger gives no great advantage in the prone position, and I think my scores back me up on that point. We are out of step with the rest of the world on targets. I do think we should get in step on the matter of triggers."

We have been experimenting with the effect of climatic changes on custom triggers. And, I might add that these are among the finest triggers made. On one of the colder southern Calif. nights, we left a rifle in the (closed) car in the (closed) garage and brought it in the next morning to weigh the trigger. The trigger had slipped 2-ounces! We put the rifle in the gun cabinet, where it stayed at room temperature (about 70 dgerees) for around three hours, and weighed the trigger again. It had regained the lost ounces and was right on the nose according ot its usual consistent weight. That 2-ounce slippage would mean certain disqualification if it occurred in a tournament—that is, if the triggers aren't set well over 3-lbs. That is the basis for our argument in favor of allowing some tolerance in the rule. Many of us are now shooting more than 3-lb. triggers to allow some margin for unforeseen eventualities. But, who is to say how much more than 3-lbs. we must allow in order to be free from the fear of disqualification?

It seems an arbitrary rule indeed when no variance whatsoever is allowed when applied to a highly-sensitive mechanism and a championship could hinge on a 1-ounce slippage. On the other hand, a variance of from .2225-.2240 is allowed in smallbore scoring gauges, which should be **absolutely uniform!** Again, we are confronted with the absence of logic.

To preface Vic Auer's remarks, he agrees on the problems involved in enforcing the rule, feels that disqualification is too harsh a penalty, and is also in agreement with our suggestion that some variance be allowed. Further, he is in accordance with our proposed amendments to the rule as outlined in the Jan. issue. He states as follows:

> (1) "It takes a certain technique to squeeze a 3-lb. trigger. When you reduce the poundage requirement, you eliminate that technique from the art specifically involved in the prone shooting game. Why eliminate a technique from the shooting game which has required years to develop? Any man can squeeze a 3-ounce trigger, but, under pressure, how many can squeeze a 3-pound one?
>
> (2) 'There would be just as many mechanical and range problems in weighing a ½-lb. trigger as in weighing a 3-lb. trigger, and perhaps as many disqualifications as a result.
>
> (3) "There is a movement in the shooting game to combine the outdoor prone game with Int'l shooting. Any change in the rules structure making the two "animals" more alike may some day influence people to attempt to combine the two into one, thus perhaps eliminating the prone smallbore game. I believe that we should not mix breeds. Let's hang on to our chosen sport!"

A gallery sponsor would like to see two separate rule books, one for gallery and outdoor position and one for outdoor smallbore prone. That is a thought, but wouldn't it be more expedient to continue with one rule book, but with separate sections for prone shooting and for gallery and outdoor position?

A well-known shooter and tournament sponsor feels that the mandatory rule will end his match-running activities, as he cannot go along with it.

At the Jan. 6th meeting of the Connecticut State Rifle and Revolver Assoc. board of direcotrs, it was voted "to emphatically object to the new NRA ruling making it mandatory to weigh all triggers at all approved and registered NRA matches." This Assoc. has written a letter to the NRA expressing its disapproval of the rule and is awaiting a reply before doing anything further.

The fate of NRA registered smallbore prone shooting could well be determined by the degree of tactfulness displayed by the NRA Official Referee at the approaching Western Wildcat 6400-point tournament at Phoenix. His manner and method of enforcing the mandatory trigger-weighing at the first major prone tournament of the 1963 shooting year will have a direct bearing on the reaction of a large number of shooters toward the rule.

Even before the weighing of triggers became mandatory, one Official Referee, in his eagerness to disqualify someone, rushed over to the winner of each match, as soon as the preliminary bulletin was posted, and weighed his trigger. In his haste, he used a **4-pound** weight to weigh the first trigger! This occurred at a 1962 state championship. After the "victim" called the Referee's attention to his error and it was rectified, he asked what would have happened if his trigger hadn't lifted the weight. The reply was, "You would have been disqualified." The shooter countered with, "And I would have packed up and gone home." What percentage is there for a shooter to continue shooting after being disqualified in one or more matches? If very many of them pack up and go home after being disqualified and demand a refund of their entry fees, the cry of tournament sponsors could turn the tide.

Going to a tournament will be like going to Las Vegas! No matter how good you think your trigger is, you will still be gambling that it will remain constant throughout four days or even two days. If your luck (**and your trigger**) holds, you will have a chance to return home with a pile of loot. If your luck (and your trigger) fails you, you're all washed up—a srtiking similarity between a sojourn in a gambling palace.

We'll conclude this month's survey with Bill Grater's thoughts—: "They have a rule so let's follow it! I shoot a 3-lb. trigger by preference; however, I feel that we are handicapping the shooter and the

(Continued on Page Twelve)

National Bench Rest Shooters Association, Inc.

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NBRSA MEMBERSHIP DUES:
Individual annual dues $5.00 (includes magazine subscription for membership term). Associate member (wife or husband, son or daughter under 18 years of age, of member in good standing—no magazine) $2.50. Life membership, $75.00. Annual club affiliation fee $10.00.

PRESIDENT'S CORNER

As your eyes glance at the President's Corner for this month, my thoughts will be with the committee assigned to select the shooting dates for this year.

In the East, where the ranges are close together, this duty is taken care of by all meeting together in one place and setting the dates at one time. In the Midwest and Farwest complicatons arise because of the number of miles between clubs. The only way to overcome this obstacle is by correspondence through the mails or by telephone. Many shooters in different regions like to attend other regional shoots, but often find that the regions close by are holding shoots on the same days. This has happened to me several times and I am sure it has happened to others. The only way to overcome this is for the Regional Directors to correspond with each other before making their regional shooting dates official.

I think all Regions should take notice when the National Matches are being held and show respect due to these clubs holding them by not having any registered shoots during these dates. It should be the Regional Directors' duty to refuse requests for dates by any club on the following days for the Year of 1963.

The National Sporter, Light Varmint and Heavy Varmint Matches will be held in St. Louis, Missouri, at the Col. Whelen Range, by the Bench Rest Rifle Club of St. Louis, on August 9th, 10th and 11th, 1963.

The National Bench Rest Championships will be held at Wapwallopen, Pennsylvania. This match will be for restricted and unrestricted classes of heavy bench rest rifles. It will be on Bob Hart's Council Cup Rifle Range on August 29th, 30th, 31st and September 1st, 1963.

More information on these dates will be forthcoming from the Clubs holding **them.**

The report I have got regarding the Rules Committee has been gratifying. They have been working hard and have accomplished a lot, but more to be done. I am sure they are doing an excellent job on each and every matter. Let us be patient as this book will be of great importance to all of us. To close all loopholes and to define each rule clearly is a very difficult job. After the rule book is completed it will be sent to each Regional Director for his criticism, approval and vote. This I am sure will take some time.

Until next month, the best to all.

A. W. Walter, President

AT NEW ORLEANS, LOUISIANA

In a letter to NBRSA Secretary Bernice McMullen, Dr. Sam Nadler in New Orleans, La., reports as follows:

"We held an unofficial bench rest match in New Orleans for all classes and had eight shooters turn out for it. I believe we are about ready to think about having official matches in New Orleans and try to build up some interest in this wonderfully fascinating game."

1963 BENCH REST MATCHES

GULF COAST REGION

SAN ANGELO,, TEXAS: May 25 and 26; Unrestricted Rifle State Championship plus Heavy Varmint class. July 27 and 28; Varmint and Sporter classes State Championship. Texas Bench Rest Shooters Ass'n, E. L. Phillips, Jr., President, 3100 Windsor, Odessa, Texas.

EASTERN REGION

WAPWALLOPEN, PA.: August 29, 30, 31 and September 1; Heavy bench rifle **NATIONAL CHAMPIONSHIPS,** Unrestricted and Limited rest classes, Council Cup Rifle Range, c/o Robert W. Hart, 332 Montgomery Street, Nescopeck, Pa.

MISSISSIPPI VALLEY REGION

ST. LOUIS, MISSOURI: August 9, 10 and 11; Varmint and Sporter class **NATIONAL CHAMPIONSHIPS.** Bench Rest Rifle Club of St. Louis, Arthur M. Freund, Sec'y, 1038 Hornsby Ave., St. Louis 15, Missouri.

WANTS MORE SHOOTERS

John B. Sweany, 187A Silverado Trail, Calistoga, California, Southwest Region NBRSA Director, would like to hear from more shooters in Arizona, California, Nevada and Utah, and to have them participate in the "get acquainted" postal shooting program he is conductnig. You can shoot a 5-shot group with any rifle on your home range, submit target and equipment information, and receive a bulletin listing results for all shooters and equipment information. You don't have to belong to or join any organization to participate in this program; you need only be a shooter with a bit of curiosity. Better write to Sweany and get particulars, right away.

Dear Phil:

We missed you at Elmira and in turn you missed a good time and some very interesting discussions. The assembly was made up mostly of fellows who through the years have faithfully attended those meetings, and the routine was pretty much as we have had in the past. I think there were more ladies present this time than we have seen for several years, and it was my observation that they seemed to be enjoying the weekend very much, too.

I guess Merrie and I had a longer weekend than most of the others because we really started our trek shortly after noon on Wednesday when we stopped by to leave Tam O' at the kennel. He didn't like that very much but we were going to visit some friends enroute and their dog and Tam O' are not exactly companionable.

I had a nice "Flybuster" Shilen action 6 m/m International sporter class rifle which I wanted to deliver in Syracuse. It was too nice a rifle to trust to the abuses of the parcel post or express system. Syracuse seems like a friendly city to me when I visit there because some of my happiest days of military duty were spent in that area when I commanded the Air Base. It was a pretty active spot then with nearly 12,000 officers and air men. That winter was cold and the snow was deep but the friendships developed were warm and lasting among the military who were stationed there with me and the citizens of Syracuse and surrounding towns who were always very cordial. Soon after, I was on my way to New Guinea and the jungles and few native villages provided a far different environment which often caused me to look back with a little nostalgia at Syracuse. A young lieutenant who had served with me in pre-war days had long been in places unknown to me but I recently heard that he was stationed at the Base in Syracuse so I set an hour or so aside to look him up, but unfortunately a few days before I arrived, he had been transferred to Alaska. I did, however, enjoy the opportunity to drive through the Air Base and note the many changes that had occurred since my day. Indeed, the whole city had grown tremendously during the intervening period.

During those Syracuse days, one of the fellows whom I met and enjoyed very much was a boy from Liverpool named Bob Lamb. We hunted together on numerous occasions and Merrie and I both spent many enjoyable hours at his house. I never was able to get him interested in benchrest shooting but he has always been tond of nice guns. He's a pretty active guy and during our overnight stay, we enjoyed some very interesting reels of New York cat hunting which he had taken last winter. The cats were cornered through the use of dogs and Snow-Travelers and it loked like a very rugged and invigorating sport. The Snow buggies seemed to go very nicely in the pictures but Bob tells me that they can get involved in some pretty complicated situations. I can well imagine

this to be true and can't visualize much use for them in the stumpy and rocky areas that I know best in Maine. It always seemed to me that whenever I followed a cat track, I was led through the most miserable country in the area. Swamps and blow-downs, steep inclines or deep brook valleys were the places that I was usually led. There are several makes of these snow machines now on the market and perhaps some day we will find them practical enough to start out and travel on them through the country with no more concern than we do our automobiles on the modern highways.

We got an early start for Clyde Hart's house the next morning and I found Clyde busy just finishing up a reaming job. Doc Garcelon was with him, wearing one of the nice new long cotton coats that Clyde provides for his friends to prevent oil spattering on their clothes. As Doc and I wandered about in those coats, I thought of the television pictures that I have seen of doctors with several of their assistants in an operating room; however, I don't really believe that Doc and I were a damn bit of assistance to Clyde and we soon all adjourned up to Clyde's living room where the temperature was better and conversation could be pursued without the risk of ruining some of those beautiful stainless steel barrels.

It is really amazing that gun bugs never run out of topics of conversation whenever they get together. I never saw it happen, though, and Clyde, Doc and I were still interested and at it when Mike Walker & Olive arrived in the middle of the afternoon. Mike took our minds off of conversation a few minutes because as he was about to sit down with us, he spied a big hawk alighting in a tree across from Clyde's house. It was more than 200 yards away but it looked like a tempting shot. Clyde went for his gun mentioning something about the shoemakers who never had shoes for their children and a very determined effort began as an endeavor was made to reduce the hawk to feathers. The windows were filled with sight see-ers as the attempt was made over a convenient railing on Clyde's back porch. It probably could have happened to any of us who own a half dozen guns and shift the scopes back and forth but with the most careful holding the shots were not going close enough to the hawk to move him from the tree. We were about to call for the ladies' relay and enlist the aid of Olive and Merrie but the hawk undoubtedly must have recognized our intentions and flew off, deciding that discretion was the better part of valor.

Prior to seeing that hawk, the conversation had been about bent barrels and whether or not they shot as well as or better than those which were straight. Clyde has been asked to express himself on this subject and he will perhaps do so, for print. He spends thousands of dollars trying to make them as straight as possible and shoot so accurately that they are among the world's best. We have learned to know a great many things about guns but in some hundreds of years, we still do not know all the answers. Also, we continually revise our thinking and sometimes recommend the reverse of our advice of a few years previous. I met a few odd experiences myself with bent barrels and Mrs. Duncan, in last month's issue of Precision Shooting, told of a barrel that had been taken from a junk pile and subsequently put on a home made action which was shot by a fellow who cleaned house with it. I once made up a real nice 10½ pound rifle and I turned down a stainless steel .219 bench rest barrel which was red hot, because I wanted a real hot light rifle. Clyde, and nearly everybody else who is competent, will tell you that to turn down a barrel is a hazardous step, and with the greatest of care, a bow in the barrel can often result. That's what happened to mine, and when I boresighted it carefully at 100 yards, it would print 6″ out at five o'clock. It was always a tricky gun to shoot although I must say it would make tight groups. I never felt over confident with it when I was shooting at various distances. My own opinion is that I think a fellow would be foolish to go looking for a bent barrel hoping that it would shoot better, and he would be just as foolish to abandon one which he knew was shooting good, even if it did have a little bend in it. There is one thing I am quite certain of, and that is people don't beat a path to your door to buy bent barrels or guns which incorporate poor shooting ones but they do make it hard for a fellow to keep up to his orders when he is providing a superior product.

During our conversation, we touched on the great difference in wear that occurs from one caliber to another, and from different chamber sizes and shapes. Of the millions of fellows who read sporting magazines, only a few of them recognize how quickly their barrels wear out if they shoot some cartridges and over-hot loads in many others. Perhaps it only takes ten shots to spoil an otherwise good rifle and barrel, under certain conditions. I am only one of several who continually write and say how foolish it is to pour those hot loads through the gun but I often wonder how much consideration is given to our advice when I see some other articles on the subject, and particularly when I see the craze for Magnums and the top velocity rifles. It is unfortunate that some folks have such a yen to corner the dollar that they put out publicity and advertising that traps and deludes the unsuspecting. What good is a $400 rifle that only shoots a few rounds before the accuracy is lost if it ever was a characteristic of the rifle. Why all this malarky about chrome plated barrels. The chrome rarely stays on them and the barrel is soon pitted with the surface as rough as the ice around an active fish hole that has to be chipped out each morning. Well, Phil, we seem to be living in a world where power is pretty close to paramount in a lot of people's minds and it is clear to see that some of the rifle makers, and in an isolated case or two, the gun writers are following that concept. Some of the arms makers fall right into this category, too, and subsidize or make it easier for a would-be African hunter to make a safari if only the outcome of that trip will be a very glowing description of their rifle or new cartridge which killed some poor animal ten times deader than dead as the unsuspecting critter was stalked or ambushed by a hunter who wanted more glory and an opportunity to get his pictures and the story in the first publication that would accept it.

Getting back to the subject of maintaining accuracy adequate enough to make very small groups consistently reminds me of a discussion that I and some of the other fellows had with our new National Champion and our highly esteemed competitive friend, Brunon Boroszewski. Brunon is the new Director of The Eastern Region and he not only led us well at Elmira but he also continued his long established practice of being host to us all in a seventh floor suite of rooms that is more familiar to many of us than some of the clubhouses at the ranges. He is a dyed-in-the-wool experimenter and I don't know any fellow who is not a gunsmith, machinist or die maker who spends more dollars in shifting rifles around. He thinks they should be functional and he has taken quite a lot of kidding from the fellows from year to year as he developed modifications which accomplished the mission without going through a beauty parlor. Many of us have noted that some rifles seem to shoot exceptionally well through the lives of several barrels. Brunon strongly adheres to the thought that much of this tight grouping comes from the ability of the rifle to absorb the recoil in such a manner that mechanical alignment between the barrel and receiver stays constant. I don't think any of us visualize a barrel that is so poorly or loosely threaded that it wobbles from shot to shot from one side to the other or up or down but we do recognize that at the time of firing the rifle, forces of considerable magnitude are created, not only from the power of the gases and the resistance to them by the bullet but also by the thermal changes that occur as a gun heats up. Perhaps these variations in temperature are more conducive to opening up a group than we have thought.

Since the rear of the scope is mounted on the receiver and the front of the scope is mounted on the barrel, one can easily recognize that a very slight variation in the relationship between these two important parts of the rifle has a corresponding effect on the size of the group. The elimination of this condition so far as the scope mounting is concerned can be best accomplished probably by a strong back or rugged sighting bar that is well mated to and securely attached to the receiver. Perhaps the advantages of this unit as a one piece scope support are fully as important as the stiffening or strengthening of the receiver.

I am inclined to favor the strongback over the sleeve type of reinforcemen,t especially when a very stiff and wide plate is incorporated with the trigger. Since no material has yet been provided to be the equal of wood for stocking, we must live with the characteristics of that material and those characteristics are most annoying so far as swelling and shrinking are concerned as well as the related characteristic which causes a bend or warping.

Naturally the larger the bearing surface this moving wood has to act upon, the more damaging is its effect. It is doubtful that within the limits of reason, a sleeved action can be strengthened enough to be immune from such stresses and the longer the sleeve, the greater is the moving force created by the wood which changes pressure due to heat or moisture. It is clearly seen how much we appreciate wood which does not move too much.

This brings us to a rather interesting point in stocking. Can a stock be inletted so the action and barrel fit too tightly. We have long ago accepted the fact that free floating barrels will hold their zero point of impact more consistently than will those which are fitted scrunch tight. It is conceivable that a few points of pressure on the barrel can aid some in reducing vibration but the possible gain is endangered by the hazard of too much pressure at one point or another. Ed Shilen, Mike Walker and I were talking over some of these things at Elmira and Mike said that tests have clearly indicated that a cylindrical type action such as those on Remington's (and the same would apply to Shilen's or other custom actions of a cylindrical type) do not do best when the wood fits too tightly around a full 180 degrees of the ac-

(Continued on Page Twelve)

Stool Shootin Stuff

(Continued from Page Eleven)

tion. This again probably takes us back to the little Gremlins in wood which cause it to press or grip in some peculiar and disastrous way on the receiver.

There are those who read this that will immediately say that so-called glass bedding would answer our problems but I am one of the non-believers. The wood still swells and creates pressure under the glass and since most of these materials pick up moisture from the air rather than absorb it, the swelling is more intensive and the time required for it to dry out is likewise lengthened. Probably the best use for glass is to stiffen up the more compressible woods at points where undue stresses occur in relationship to the bearing surfaces. Probably more good stocking jobs are ruined by pulling rear tangs down too tightly than from any other abuse. Even those such as the Remington with a comparatively wide surface can be abused. Allen head screws can be of real advantage when used in conjunction with the proper trigger bows but there are some fellows who can't resist the temptation to use the longer ell of their Allen wrenches for the turning force and I have even seen some extend that handle and create still more power to compress the wood and bend the action.

Well, Phil, it is the discussion of such subjects that make meetings of gun bugs so interesting and the long hours such as we spend at Elmira and other locations, so fruitful.

Cordially yours,

Ernest Stuhlbarber

Random Shots

(Continued from Page Nine)

shooting game by having a mandatory rule.

"The enforcement of this rule will hinder the shooting game in the long run. Old time shooters and good shooters, who foot the bills, will drop out.

"When a competitor goes to a tournament in good faith, enters in good faith, pays his entry fees and his expenses to and from the tournament, knows his trigger is 3-lbs. and legal and has faith in his trigger, it is not fair to disqualify him should a change in temperature or in the operation of the trigger bring it below the legal weight. That should be classified as a **Malfunction,** being due to a mechanical defect! . . . This is the greatest determent to smallbore shooting that could happen."

And, herein lies a most interesting point, and one which could bring about an onslaught of official protests. This is exactly the loophole for which we have been searching. Now, if your trigger becomes illegal through a mechanical defect, defined under rule 9.11 as a "Malfunction," you should have a legitimate protest. The difficulty lies in proving a mechanical defect, but according to the unwritten law which has governed the shooting game all these years, "the shooter should be given the benefit of the doubt."

I suggest that it would be a good thing if more of you expressed your views, whatever they may be, on this issue. We repeat our offer to give space to arguments on both sides, if any of you have the courage to "stand up and be counted."

NEW YORK TEAM MATCH

Thirteen four-man club teams and thirty two-man teams competed in the annual Club and Two Man Team matches of the Metropolitan Rifle League in Brooklyn on January 20th. Matches are fired at 100 yards, indoors with scope sights, on the MRL reduced 100 yard target with 1¾ inch 10 ring and ¾ inch X-ring.

Roosevelt Rifle Club white team of L. Aronsohn 399-22, F. Boelke 400-24, E. Clausen 400-31, J. Lantelme 400-27, total 1599-104x, won the Ossining Trophy and four gold medals. Roosevelt red team of H. Stone, I. Tekulsky, S. Tekulsky and W. Tomsen took the silver medals with 1597-123. Bronze medals went to the Madison Rifle Club (N. J.) gold team of R. Triggs, P. Murray, F. Triggs and W. Ritchie with a 1597-105.

Walt Tomsen and Fred Cole won the two man team gold medals with an 800-63x score. G. Snellgrove and P. Murray were silver medal winners with 799-61, A. Heyl and F. Duch were bronze medalists with 799-55, and J. Holle and F. Boyd were fourth with 799-51.

Individual aggregate winners were: Rans Triggs 800-69x, Lloyd Norton 800-64 and Ellen Glaab 800-54x.

Ellen Glaab is the 15 year old daughter of the late Joe Glaab. She had high score of 400-28 on the 7th place Madison Rifle Club purple team. She fired a 400-26 in the two man team match but her team mate, Fred Triggs, didn't give her shooting support and they ended in 18th place with 793-49x.

MODESTO, CALIFORNIA, GALLERY MATCH

By Duane Jenner

The Modesto Gallery Championship Match was held January 5 and 6. The shoot was planned to accommodate 48 shooters because it was figured that it was too close to Christmas and New Years to draw too much of a crowd, but we figured wrong and had to add relays on Sunday and even had to go into Saturday night to take care of all the shooters. There were 98 entries and at the last minute, ended up with 83 shooters showing up. This just goes to prove that you can never tell about shooters; they will sometimes go through hell and high water to attend a match.

Shooters came from as far east as Fort Carson, Colorado, with 7 men driving through wind and storm to attend this match, and win the team match.

The match consisted of 20 shots each prone, sitting, kneeling and standing .The team match was 5 shots in each of the four positions, 4 man team.

Individual winner was William Roos, Sacramento, with score of 788 out of 800. He was followed by Vic Zimin Santa Rosa, 882 and Adrian Landberg, Willows, 779.

The AMU USA Defence Com. "Aradcom Zeus" team from Fort Carson won the team match with a 779 score. Santa Rosa Rifle Club and Modesto Rifle Club ranked 2nd and 3rd, each with a 771 score.

PAN-AM GAMES RIFLE TEAMS TRYOUTS

John R. Foster reports that tryouts for the PAN-AM Games rifle teams at Lackland AFB, Texas, experienced difficult shooting conditions of below freezing temperatures and winds, with pit details suffering as much or more than the shooters.

Twenty-four competed for places on the 50 meter, three-position smallbore team, including three civilian shooters. The ten high for the three-day aggregate, three times over the 120 shot course, were:

Gary Anderson, USAR	3425
W. E. Krilling, USA	3398
Verle Wright, USA	3392
D. I. Boyd, USMC	3392
J. T. Bertva, USAF	3386
E. E. Caygle, USAF	3378
A. H. Hannon, USAF	3374
L. W. Wigger, Jr., USA	3369
E. D. Duncan, USMC	3365

Seventeen competed for places on the 300 meter Free Rifle team. Ten high for the three-day aggregate were:

Gary Anderson, USAR	3389
Verle Wright, USA	3378
W. E. Krilling, USA	3351
J. T. Bertva, USAF	3350
L. W. Wigger, Jr., USA	3338
M. Gunnarsson, USA	3332
C. Davis, USA	3328
T. E. Banks, USA	3319
J. R. Foster, USAR	3311
E. E. Caygle, USAF	3305

Jack Foster also supplied interesting notes on arms, ammo and other equipment used by competitors, which we will pass along to you in March. We only received the report on the 300 meter tryouts as we were closing this issue.

ANOTHER UNUSUAL EXPERIENCE

By Dan Hufnail

Dear Phil:

Recently, I had an experience that might be of interest and, furthermore, I would like an answer as to "why" from some expert on interior ballistics.

I had a reason to recover a 75 gr. 6m/m bullet undamaged, except for land engraving, of course. I have read many accounts that a primer will start a bullet into the barrel, so, I figured perhaps a ½ grain of Unique would just about push it through the barrel, which is all I wanted. So, I loaded a .243 case with ½ grain of Unique, Remington 9½ primer and the 75 grain spitzer bullet of my own make. As you know, my basement is about 65 feet long, so I went to the far end, where my backstop is lined up with the chronograph, rumpled up some newspapers in a box and placed them up against the backstop, just to be on the safe side. I held the rifle a foot or so from the box and touched it off. It sounded exactly like I had snapped it on a fired primer. Still being cautious, I held it there for at least a minute. Nothing happened. I then unloaded the case to take a look. As far as I could see the bullet had not moved one bit. The indentation in the primer appeared normal. I then went back ot the other end of the basement and placed the case in the press, lifted the handle until the bullet protruded through the ⅞ hole where the die goes, grabbed onto the bullet with a pair of diagonals and lowered the handle. It sounded like opening a bottle of pop. Pfft. I received two or three pieces of something, quite hot, on my chin. Do not know if it was powder or prming compound. I have gone to great length to describe this, mainly to give some indication as to the length of time that passed, which I would estimate to be 2½ to 3 minutes.

Now I am aware that this sounds like insufficient oxygen for combustion but I believe we can safely discount that theory. I just do not believe it would be possible to load a case in the normal manner, unless it were done in a vacuum, and not have enough oxygen for combustion. Maybe someone with far more experience than I can answer this.

I finally did recover a bullet but it took 1½ grains of Unique, and I then had to push it the last inch with a cleaning rod.

UNSATISFACTORY EXPERIENCE WITH YAMA WOOD

By Warren Wright

(London, Ontario)

I would lkie to make a few comments and remarks concerning my experience with Yama wood, which has been mentioned at least twice in Precision Shooting (Nov. '59 and July '60).

Both articles were quite complimentary, and stressed the light weight and stability of Yama wood. I had a .22 sporting rifle which I wanted to restock for local competition where there is a 7 lb. weight limit. To get the shape nad style I wanted, a wood lighter than walnut was indicated, and for a target stock good stability was also necessary. Judging by the articles in P. S., Yama wood was the answer, so I ordered a blank from Mr. Longarini, through a local gunshop.

When the blank arrived I turned it over to a good friend and shooting companion, Ed Hughes, who has made two other custom stocks for me. Mr. Hughes is a Master pattern maker by trade, having 15 years experience with various kinds of wood. He was favourably impressed by the appearance of the blank, and we were both curious to know what kind of a stock it would make.

As work on the stock progressed, however, several disturbing facts came to light. Here is a summary of the conclusions we were led to:

1) Yama is about half as stable as walnut on the first cut.
2) Walnut is quite stable after three cuts, but Yama moves after each cut.
3) Yama is softer material than walnut or cherry, and does not hold edge definition nearly as well.
4) Softer for cutting with a chisel but chips more and tears with a spoke shave.
5) Can change grain structure completely, both density and direction, in as little as two or three inches.
6) Compares, in the hardness of the face grain, with Ponderosa Pine.
7) The blank was not cut true to the grain.

In attempting to bed the barrel and action, they were fully bedded no less than five times, but each time the fore-end or the wood through the action warped so much (anywhere from 1/16" to ¼") as to make accuracy impossible. Finally we ran out of wood and could not bed any deeper. In order to salvage the stock we were forced to glass bed the action and free float the barrel. In this way the stock was completed and the gun shot well, with the desired shape and weight of stock. The completed stock, although larger than the original walnut stock, had considerably less torsional rigidity, in fact was definitely "springy."

On the credit side, Yama is a pretty wood which takes a nice finish (although it marks easily), is easy on chisels, cuts easily, and is silky when carving.

I realize that the foregoing relates to only one stock, however, I feel that it should be brought to your readers' attention to counterbalance the impressions created in yuor previous articles. The conclusions stated were based on Mr. Hughes' expert opinion and experience (I have two stocks which testify to his skill and knowledge). The results reported speak for themselves. I would therefore hesitate to recommend Yama as a stock wood unless weight was the only factor.

FIVE MORE RECORDS SET WITH CCI PRIMERS

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when it counts

Says Ed Shilen. In the Sporter Class, 200-Yard Aggregate of .5118 MOA and Grand Aggregate of .5443 MOA. In the Light Varmint Class, 100-Yard Aggregate of .5104 MOA; 200-Yard Aggregate of .4998 MOA, and the Grand Aggregate of .5051 MOA in the Eastern Regional Shoot, Chippewa, Ohio, July, 1962.

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BALLISTICS DOPE FROM HORNADY

Available for the serious handloader from the Hornady Manufacturing Company, P. O. Box 906, Grand Island, Nebraska, is a sheet listing Sectional Density and Ballistic Coefficients for all bullets in the Hornady line.

We suspect this sheet is the result of work by Homer Powley in the Hornady Ballistics Laboratory this past Summer.

Also available from Hornady is a load data sheet for the 7mm Remington Magnum, listing loads for all Hornady 7mm bullets, with all acceptable powders, for up to maximum safe velocity-pressure levels. This sheet, too, lists Sectional Density and Ballistic Coefficients for all the Hornady 7mm bullets.

We believe these sheets may be obtained upon written request to the Hornady Manufacturing Company. They are worth getting.

P. H. T.

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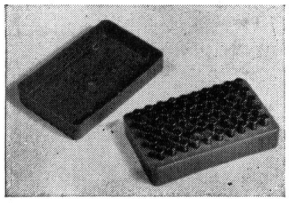

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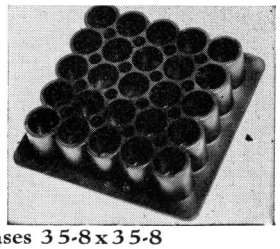

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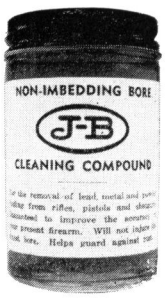

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WHAT SIZE AIMING BULL?

By Jesse M. Grigg

From the standpoint of aiming ease the sizes of the outdoor bulls are much too small for iron sight shooting. Both the meter and the yard targets are tests of seeing ability rather than of ability to hold and squeeze. The 50 and 75 foot targets for indoors are vastly better, but still are too small for efficient seeing.

Even though larger bulls would be better, it must not be supposed that aiming diameters could be increased indefinitely with proportional gain in advantage. An absolute limit would be reached when the aiming angle of the bull reached the maximum angle of vision, just as, in the other direction, an absolute limit would be reached when the bull diameter equaled zero. Thus on the one hand if the bull were too small it could not be seen; on the other, if too large, the eye could not compass it at a glance.

The latter dilemma confronted me years ago, after I had installed a ring aperture for reticule in a 6x rifle scope, only to find that opposite sides of the magnified bull could not be viewed simultaneously. The 6x scope had increased the apparent diameter of a 9 minute bull to 54 minutes. The fact of failure to get a useful sight picture then is proof now that the most favorable diameter is something less than the daimeter for which the eye must be moved to note the conditions on opposite sides.

The problem is not one of merely finding an arithmetical average. Its solution must be based on the law which governs the strength and quality of visual perception. This underlying principle is known in psychology as Weber's Law which states that sensation is proportional

to the logarithm of the stimulus. Stimulus here means the cause, say a pin prick, that is followed by a reaction of one of the senses. Involving the logarithmic principle, the working of the law acts as a brake, not only on the reactions of the five senses, but also as a brake on all reactions, sensory and mental, including even all emotions such as anger, pleasure, and so on.

An example of its operation follows. Suppose that a weight, say 3 ounces, is laid on the palm of an outstretched hand, and that the sensation due to 3 ounces is regarded as the unit in which sensation due to additional weight is to be reckoned. According to the logarithmic principle, to double the sensation would require that the stimulus be raised to the second power, or be squared, so that it would equal 3 x 3, or 9 ounces. Similarly for the sense reaction to be tripled would require that the unit stimulus be raised to the third power so that the weight would be 3 x 3 x 3, or 27 ounces. Thus sensation increases arithmetically as the stmiulus incraeses geometrically, and the numbers 2 and 3 are respectively the logarithms of 9 and 27 to the base 3.

In its application to size of an aiming bull it is noted, according to what has been shown, that the sitmulus involves two factors. One is favorable, the other unfavorable. On the favorable side it is obvious that as the bull is made larger it is more easily seen. The logarithm of size may be expressed in terms of either area or diameter, for the logarithm of diameter squared is merely twice the logarithm of the diameter, and the proportionality factor 2 will later cancel. So the favorable factor is simply the logarithm of 1 plus d, where d denotes the bull diameter in minutes.

For the unfavorable side it is known that after a certain diameter is reached the eye cannot compass the whole of the bull at a glance. So, in the usual case of wabbling, recognition of a good sight picture is unlikely or impossible because the aim will have moved to some other place in the time that is needed to shift the eye. Thus as diameter is increased, there is finally reached a diameter for which appearances on opposite sides are noted consecutively instead of simultaneously. Trying to aim with wabbling sights is then a failure. It is so because the eye perceives only what it attends, as is proved by fact that sleight of hand performers ply their art on the principle that "the hand is quicker than the eye."

Let the diameter for the fail condition be denoted by M. Then, as no aiming by simultaneous observation of similarity may be done, the aiming efficiency will be nil and proportional to the zero difference M minus d. The expression for the unfavorable factor is thus the logarithm of 1 plus M minus d. The product of the two factors is

$$\text{Limit}_{d=M} \quad U = \frac{\log(1+M-d)}{\log(1+d)} \qquad (1)$$

with which, by the methods of differential calculus, it is easily shown that the most favorable diameter d corresponding to any experimentally determined value of M is given by

$$\frac{\log(1+M-d)}{\log(1+d)} = \frac{(1+d)}{(1+M-d)} \qquad (2)$$

which is satisfied by

$$d = M/2 \qquad (3)$$

This means that the most favorable diameter is half the one for which the eye must be shifted to see opposite sides.

In the following table are shown the relations between d and M for the zone of potentially useful values, and shown also are the corresponding values of U. M. and d are in minutes of angle. U is the comparative efficiency.

d	M	U
6	12	3.78
8	16	4.82
9	18	5.31
10	20	5.75
12	24	6.58
14	28	7.32
16	32	8.02
18	36	8.68
20	40	9.28

The diameter of the 100 yard smallbore aiming bull is nearly 6 minutes; of the 50 yard and 50 meter slightly less; of the 50 and 75 foot indoor bulls respectively it is nearly 8.90 and 9.34 minutes. The diameter of the 100 yard aiming bull on the proposed international target I believe is 8.25 minutes.

This table of M and d values is based on the condition that M in minutes is the diameter of the smallest bull whose opposite sides can barely be seen simultaneously in concentrated vision. A bull of half this diameter, or M/2, is then the proper one for best aiming efficiency.

The fail diameter M of course depends to great extent on the potential steadiness of holding. In machine rest shooting, for instance, there would be no fail diameter at all; for then, in absence of wabbling, the eye might be shifted leisurely from place to place. By the same token the fail diameter for prone holding is larger than it is for offhand holding, which is to say that the most favorable bull diameter for prone shooting is larger than that for the offhand.

Various methods differing only in detail may be employed in the experimental determination of M. In all of course an element of wabbling must be involved. In almost none is it practical to use a sighted rifle for the simple reason that such large front sight apertures are not commonly available. However, if one will take the trouble to ream existing inserts and make samples of the indicated favorable bulls it is practical to check the finding by shooting.

In any method of determining the fail diameter much of complication will be avoided by starting with a pair of fixed parallel lines between which a sight may be taken from various convenient distances in the rear of them. For instance a pair of vertical parallel lines might be drawn in ink on a window pane that overlooks a suitable landscape; then by taking a position either near or far according to need, these lines could be seen to subtend the outline of a distant outdoor object of any practical size. Better yet, the parallel lines may be ruled on a piece of window glass that is propped up indoors to subtend an aiming bull of appropriate diameter. In one practical case the outdoor 50 yard bull at 25 feet corresponds very nearly to 34 minutes of angle. For other cases the angle subtended is found by dividing the product of 300 and the diameter in inches by the distance between the eye and the bull in feet. By spacing the parallel lines about half an inch apart and placing the glass several feet ahead of the eye, no blurring of them will

(Continued on Page Sixteen)

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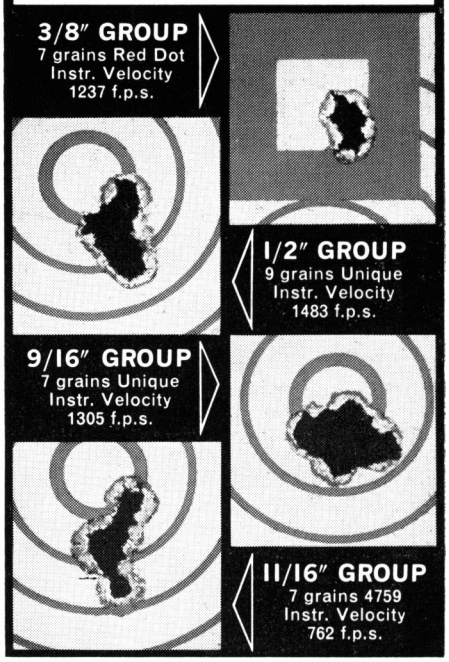

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What Size Aiming Bull?

(Continued from Page Fifteen)

hamper the observation.

The fail value of M, according to my experiments, is 24 to 28 minutes, these corresponding respectively to favorable aiming bulls of 12 and 14 minutes. (These are inch minutes, not true minutes.) However, there is a considerable latitude in the matter of size. From the prone position at 50 feet, I was able to fire x-groups on a bull of 17 minutes diameter, although a little difficulty in comparing white band widths all around would rule against my choice of 17 minutes for steady shooting. But the 12 and 14 minute bulls both proved satisfactory, not only for aiming ease, but also for group size. Nonetheless, in a choice between the two, perhaps it would be better to be guided by conservatism and choose the smaller one.

In regard to measurement of size the definition of a minute of angle is now in order. As we are accustomed to considering that one inch at 100 yards subtends an angle of one minute, it is necessary therefore to recall that this definition is not quite true. Actually 1.044 inches at 100 yards subtends a minute of angle. So, where it is important in what follows to distinguish between these two, the approximate value will be called inch minutes and the other true minutes. In inch minutes the diameter of a 12 minute bull would be 6″ for 50 yards, and 12 inches for 100 yards, these corresponding to about 11.5 true minutes.

The sight picture on such a bull is much more distinct than the ones to which we are accustomed. Instead of a tiny dot in a sea of white, the black is a distinct disc, and the white a thin, easily discernible ring surrounding it. However, owing to unusual size, there seemed in test to be a lack of the aiming symmetry which is a helpful aid on the present bulls when the relations between bull, white band, and outside rim diameter of the ring are sutiably proportioned. So I tried an 11 minute bull, (about 10.5 true minutes), and was pleased to find that the above named symmetry could be provided for this bull without use of excessive white band width.

But even an 11 and certainly a 12 minute aiming black for use outdoors on target board of existing sizes could be practical only for 50 yard and 50 meter shooting. For 100 yard shooting on the 12 minute bull a 3-bull target would need to measure 20″ by 60″ if it provided room only for the nominal 3 minutes of white plus another minute for wabbling. The target frames would be too heavy and unwieldy for carrying by competitors, and the bellying due to wind and shading due to wrinkles, both disastrous in metallic sight shooting, would be execessive. Beside this, the change of size would require complete replacement of existing field equipment.

For 50 yards and 50 meters, however, there is room for vast improvement without changing frame sizes. For 50 meters we could resurrect the 5-bull target which was hung on 100 yard frames for 50 meter shooting 20 years ago. It had an aiming black of 9.653 true minutes, better than the 8.523 true minutes of the present 50 foot indoor target. Though the bulls were much too close to the nearest margins then, they could now be moved farther in to provide much more white room than the scanty and inadequate amount to which we are limited on the present bulls, including the 50 foot.

What improvement for the 50 meter target is possible, is possible in almost the same degree for 50 yard shooting. With 5 staggered bulls and the present 100 yard frames an aiming black of 6″ diameter with about 2.25″ to the nearest margin would be possible; but, personally, I would rather sacrifice half an inch of black in order to gain a little more white area. The advantage of plenty of white is hard to overestimate, as is proved by the superior aiming ease that is had on the isolated sighting bulls of the present 50 yard and 50 meter targets.

For frames of the present width, perhaps there is no possible change that would mitigate the faults of the target which is presently used for 100 yard metallic sight shooting. Not least of its fault is a white area that is inadequate, as already has been claimed for the present 50 yard and 50 meter targets in respect to the record bulls. For a nominal 3 minutes of white band the 4 inch margin on the 100 yard target leaves room only for one minute of wabbling with effect that, if the ring wabbles off the paper against a dark background, the white does not get any wider on that side and the aim errs in that direction.

There are two logical courses which might be followed in regard to this target. One is to continue shooting on it with metallic sights as it is. The other is to use it only for scope shooting, and abandon 100 yard metallic sight shooting as long as the present narrow frames are used. The 6 minute aiming bulls on this target, like the present 50 yard and 50 meter bulls, are too small for any excepting ideal light conditions.

At this place may be pointed out another advantage, though slight, in the use of larger aiming bulls. It is that the most favorable width of white band decreases slightly as the bull diameter is increased, the decrease of white band width improving the accuracy of aim in about the same proportion.

According to Weber's Law the best white band width for the present 50 yard bull is 3.55 minutes, for the 100 yard 3.467 minutes, for the 50 foot indoor bull 2.889 minutes, and for a bull of 11.5 minutes (6″ for 50 yards) the white band width would be only 2.5 minutes. These figures are based on true minutes of aiming black.

In the calculation of the needed diameter of a front sight aperture the sighting radius of the rifle needs to be taken to account. My rule of thumb method for bolt action match rifles with 28″ barrels is to allow .010″ of diameter for each minute of angle to be subtended. Thus for a 6 minute bull and a 3 minute white band the needed aperture diameter would equal 6 x .010″ plus 2 x 3 x .010″, or .120″, which is on the side of small for such a bull.

The experimenter can fire for groups on a bull of 11.5 minutes by hanging a 100 yard smallbore target at 50 yards and using a front sight aperture of not less than .173″, a diameter that is given by a number 17 drill. The x-ring would be the 10-ring which, an inch in diameter, is about one and one-eighth times the standard 10-ring diameter.

In conclusion it seems to me that outdoor smallbore shooting on the presently used targets is moving headlong toward extinction. In the Chicago area, 20 years ago, when Sunday approached we had to decide which tournament to attend. Now we have to pick the Sunday if we want to shoot. It is perhaps a gross understate-

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ment to say that the number of tournaments in this area has declined at least 50 per cent in that time. Moreover, in the past two years, participation in those still held has diminished an estimated 20 per cent, with attendances approaching the lows at which sponsors give up.

There are several reasons for the decline. Notwithstanding that the competitor now helps with his own labor, cost of tournament participation is high through no fault of the sponsor. Another reason, the occasional shooters pass up tournaments, presently to find that "next time" is too late. Still another reason, perhaps insignificant and merely a personal opinion of mine, is that the inspiration to shoot which, 20 years ago, was instilled by every issue of The American Rifleman, now is lacking. But the most potent reason of all is that we are losing to easier forms of competition. When I try to induce the hot-shot gallery shooters of my own club to attend an outdoor tournament they put me off with, "Aw, that's too hard!" Yet, come Sunday, and these same ones drive 40 miles or more to fire .30 caliber.

Unless something is done to make the smallbore game easier it is going to die in favor of other forms of competition. Revision of the targets is needed, but this must not be a reduction in the size of the scoring rings at this critical time. For the benefit of the scope shooter they must be no smaller than they are at present, and for the metallic sight shooter the diameters of the aiming black should be increased so that metallic sight shooting, like scope shooting, would be a test of ability to hold and squeeze instead of a test of seeing ability, as presently it is.

How Straight Should A Barrel Be?

(Continued from Page Seven)

a twelve-inch bull at 200 yards in ten shots, but as I never expect to shoot more than a three-shot group on a running deer, I ain't worried. The first three are purty close together!

* * * * *

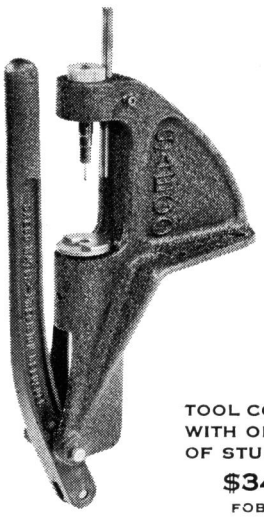
FROM W. T. ATKINSON, Prescott, Arizona, partner in the Atkinson & Marquart Rifle Co., makers of custom barrels and custom rifles. Bill Atkinson is also a capable competitor in rifle matches.

Dear Phil:

Received your letter concerning the article by Fred Hallberg on "How Srtaight Should A Barrel Be?" If a barrel of perfect straightness is going to be the guiding rule, then any barrel that is not perfectly straight should be considered a "bent" barrel. If this assumption is correct, then ninety-nine percent of the barrels being made today, whether they be custom or factory, should be considered as "bent" barrels and the other one percent would be straight barrels due largely to the fact that if enough barrels are made, some of them are bound to be straight.

We have certain tolerances by which we work as does any one manufacturing any item. Target barrels and Premium grade sporter barrels must come within the required specifications as to straightness, bore and groove size, and have required no straightening during the complete manufacturing process. Target barrels will vary from true straightness and also concentricity without any ill effect on accuracy. The amount of variance is governed by the tol-

(Continued on Page Eighteen)



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How Straight Should A Barrel Be?

(Continued from Page Seventeen)

erance and quality control of the manufacturer.

I do not think that a statement from the barrel maker is necessary concerning each barrel as to whether it has or has not been straightened. I do think that any one ordering a Target Barrel or Premium Grade Sporter barrel should expect to get a barrel that has required no straightening during the manufacturing process. Other barrels that require straightening should have the straightening done by the barrel maker and the barrel turned afterwards for concentricity before making shipment to the gunsmith. Straightened barrels can be good barrels but most gunshops do not have the facilities for doing this type of work.

The main thing a shooter should be interested in is results. If he gets satisfactory results from his rifle, the thought of whether the barrel is "bent" or straight should be of no consequence. If a rifle does not shoot (accurately) the chances are that it is not caused by a barrel varying from true straightness but still within the manufacturer's tolerances. If it is the fault of the barrel that the rifle won't shoot, it is usually caused by it not being uniform in size of the bore and groove or lack of uniformity in the bar of steel from which it was made.

We can go on and on about this subject and related matters but I believe that it all boils down to the fact that barrels can vary from true straightness a certain amount and have no ill effects on the performance or the inherent accuracy of the barrel.

* * * * *

FROM M. H. "MIKE" WALKER, Chief Designer, Ilion Research Division, Remington Arms Company. Rifles are not only Mike's business, but his hobby as well. He has been an outstanding bench rest competitor and experimenter since the beginning of present day competitive bench rest shooting. He has held several heavy bench rifle national records and presently holds national records for Sporter class, adding his latest one only last August.

Dear Phil:

One of the largest difficulties in assessing the effects of barrel crookedness on accuracy is the lack of a good method of measuring the crookedness. I do not believe that crookedness **alone,** at least in the quantities we are now getting in top grade barrels, affects bench rest accuracy enough so that it can be determined in any tests we are able to conduct now.

It is thought that internal stresses caused by bending or other forms of cold working have more effect on bench rest accuracy than crookedness alone. For this reason straightened barrels are probably less accurate than unstraightened barrels.

There are so many variables affecting the attainment of pure accuracy that, up to the present time, have been beyond our control. Many are still uncontrollable. As a result, any test for significant difference between results obtained with crooked barrels and straight ones would require more shooting than any individual or corporation for that matter, could perform.

One of the largest variables is the effect bullets would have on a test of this kind. It is almost a sure thing that **perfect** bullets would shoot just as well in a crooked barrel as in a straight one. Barrel distortion and/or movement due to the passage of the bullet would be the same for each shot and no displacement on the target from shot to shot would occur. So right away we need to make up our minds. Are we testing bullets or barrels? It is not impossible, in fact, it is relatively easy to make the rifle do the **same thing** from shot to shot. Bench rest shooters have proved this. It is an inanimate object which uses the **same** components for each shot. It will tend to remain the same over periods of time unless varying forces are applied to cause it to change. Now let's face some facts of life. The primer, powder, and bullet are **different** for every shot. A major portion of the variables today are tied up in that little package, the cartridge.

Unbalanced bullets shot through crooked barrels would quite probably give worse results than when shot in straight barrels. However, the difference would be difficult to tack a quantity on it the bullets used in the hypothetical test were of bench rest quality. Since original unbalance is not the only cause for poor quality bulelts, how will we eliminate or isolate by measurement this most important single variable?

It is unlikely that the test described by your correspondent, in which a rifle was tested with a so-called straight barrel, then with the same barrel after bending, had any significance. The differences between crooked and straight barrels are surely smaller than could be picked up by a test of this kind.

All these statements apply only to grouping ability. If we bring in the ability to hit small objects at different ranges with the same sight setting it will take a better man than I to calculate what happens.

* * * * *

FROM CLYDE R. HART, Hart Rifle Barrels, Inc., whose barrels have established an enviable record of accuracy in all types of rifle competition.

I appreciate your consideration in offering people directly connected with the barrel business, and closely associated with it, an opportunity to express themselves on Mr. Hallberg's forthcoming article.

Mr. Hallberg seems to try and create the impression in the first part of the article that the crooked barrel shot as well as the straight one. While I would not go quite so far as to say that one bent to this degree would always give like results, I would agree, that to a point much less than

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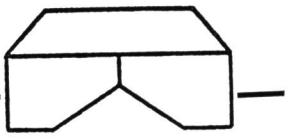

an eighth of an inch, that this is true. We have done considerable testing in this regard with bench rest target equipment and have come to the definite conclusion that it has very little if any affect on accuracy.

He further states that if an otherwise good rifle does not group, one should first look at the bedding rather than the barrel. To this I think all barrel makers will say Amen, as poor bedding is the barrel makers' biggest source of headache. To further quote Mr. Hallberg, "If the barrel is of proper size and not worn or physically damaged, other factors will most often be found to be at fault." He then takes the opposing view that he doesn't want to shoot a bent barrel, and at this point I am wondering what is to be gained.

I feel that in the barrel itself, uniformity and freedom from defects in the steel and tool marks from reaming are much more important. A good shooting rifle, as the bench rest shooters have so conclusively proven, is a combination of many things; a good action and barrel properly installed, the best fit in the stock that can be accomplished, good bullets, primers and powder. Omit any one and accuracy suffers.

As to the questions he hopes will be answered, I can only speak for myself in regards to what the gunsmith should do or not do. We do not expect nor do we want anyone tampering with our barrels as they are delivered, other than turning to meet their own particular demands in appearance or weight. If we did not feel they would shoot, we would not ship them out for we are endeavoring to make a good barrel, rather than a quantity. Whether or not we have succeeded must be answered by shooters.

(Editor's note: Some of those shooters' "answers" in 1962 were from the National Smallbore Prone Champion; in bench rest, the unrestricted bench rifle National Shampion, the runner-up and thirteen other of the twenty top ranking shooters; the Heavy Varmint Rifle class National Champion, the runner-up and seven of the other top ranking ten; and the Sporter Rifle class National Champion.)

* * * * *

FROM ED SHILEN, Shilen Rifles, Dryden, N. Y., maker of the Shilen Action and bench rest record making rifles. Ed has made several Varmint Rifle class national records himself.

Fred Hallberg's article is typical of the thinking of the average shooter concerning barrels with crooked bores. First of all, let me say that I have only once seen, in my gunsmithing career, a barrel which I considered to have a perfectly straight bore. The majority of the barrels have some amount of bend in them even though it's only a few thousandths. It has been my experience that crooked barrels will shoot just as accurately as a barrel that is straight or nearly straight. If there is a difference in the accuracy potential between a straight and crooked barrel, then it's so slight that I have never been able to detect it.

Mr. Hallberg asked, quote, "Are all barrels supposed to be straightened by the receiving gunsmith?" My answer is a definite NO. Straightening a barrel would mean putting stress into the steel which would certainly do more harm than a slightly crooked bore.

I agree 100% with Mr. Hallberg when he stated that if an otherwise good rifle does not group, one should first look to the bedding rather than the barrel. I have said before and I will say it again, there are more poor shooting rifles because of incorrect bedding rather than a faulty barrel. Clyde Hart once told me that he would rather have a rifle with a good bedding job and a second class barrel, rather than a rifle with a first class barrel and poor bedding job. I have found this statement to be 100% correct.

* * * * *

(Editor's note: There will be more on this subject in a future issue, we hope in March.)

NEW

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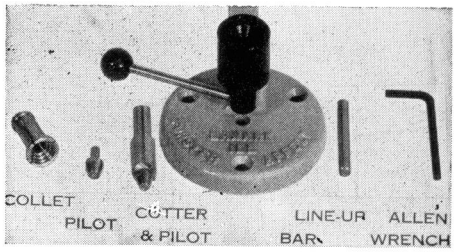

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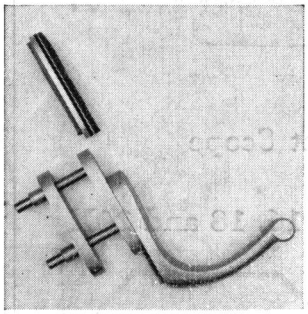

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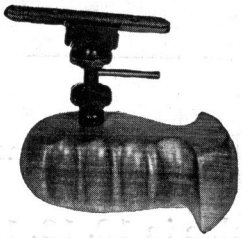

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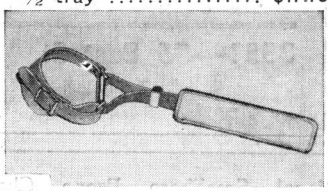

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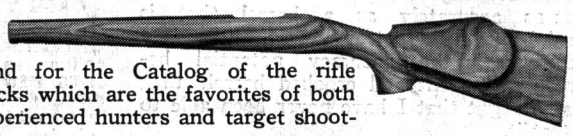

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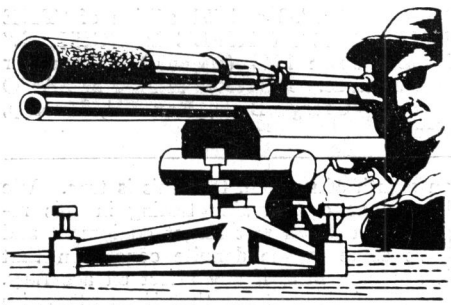

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